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No. 08-

IN THE

Supreme Court of the United States

ENERGIZER HOLDINGS, INC. AND
EVEREADY BATTERY COMPANY, INC., PETITIONERS,

v.

UNITED STATES INTERNATIONAL
TRADE COMMISSION, ET AL.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

PETITION FOR WRIT OF CERTIORARI

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QUESTION PRESENTED

Whether the construction of patent claims must be governed by a substance-driven and common-sense focus on ascertaining the invention, based on how skilled artisans would understand what the claims mean in the context of the specification and prosecution history, or whether, consistent with what the Federal Circuit did here and elsewhere, a court may treat claim construction so rigidly as to require rejecting what skilled artisans recognize as the intended and only logical meaning, even when the result is invalidation.

PARTIES TO THE PROCEEDINGS AND RULE 29.6 STATEMENT

Petitioner Energizer Holdings, Inc. is the parent company of Petitioner Eveready Battery Company, Inc. Energizer Holdings, Inc. does not have a parent company, and no publicly-traded corporation holds 10% or more of Energizer Holdings, Inc.'s stock.

Respondent is the United States International Trade Commission. Intervenors in the appeal below and Respondents in the underlying proceeding are: Golden Power Industries, Ltd., Guangdong Chaoan Zhenglong Enterprise Co., Ltd., Guangzhou Tiger Head Battery Group Co., Ltd., Fujian Nanping Nanfu Battery Co., Ltd., Hi-Watt Battery Industry Co., Ltd., Ningbo Baowang Battery Co., Ltd., Sichuan Changhong Electric Co., Ltd., and Zhongyin (Ningbo) Battery Co., Ltd.

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PETITION FOR WRIT OF CERTIORARI

Petitioners Energizer Holdings, Inc. and Eveready Battery Company, Inc. (collectively "Energizer" or "Petitioners"), respectfully seek a writ of certiorari to the United States Court of Appeals for the Federal Circuit.

OPINIONS BELOW

The three April 21, 2008, opinions (Pet. App. 1a-47a) of the Federal Circuit are not reported. ("*Energizer IV*"). The decision (Pet. App. 48a-75a) of the International Trade Commission ("ITC" or "Commission") ("*Energizer III*") also is not reported. The previous decision (Pet. App. 76a-88a) of the Federal Circuit was reported at *Energizer Holdings, Inc. v. Int'l Trade Comm'n*, 435 F.3d 1366 (Fed. Cir. 2006) ("*Energizer II*"). The first decision (Pet. App. 89a-125a) of the ITC ("*Energizer I*") prior to the first appeal is not reported.

JURISDICTION

The judgment of the court of appeals was entered on April 21, 2008. A timely petition for rehearing and rehearing *en banc* was denied on August 1, 2008. This Court has jurisdiction under 28 U.S.C. § 1254(1).

STATUTORY PROVISION

35 U.S.C. § 112 provides, in pertinent part:

> [¶1] The specification shall contain a written description of the invention, and of the manner and process of making and using it, in

such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

[¶2] The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

STATEMENT OF THE CASE

I. BACKGROUND.

The invention at issue solved the important environmental problem of preventing battery leakage without the addition of mercury.[1] Alkaline batteries typically contain an electrolyte (such as potassium hydroxide), a metal oxide cathode (such as manganese dioxide), and a zinc anode. The drawing below, from the version of the HANDBOOK OF BATTERIES AND FUEL CELLS (David Linden, HANDBOOK OF BATTERIES AND FUEL CELLS, McGraw-Hill Book Company 1984) that existed at the time of the invention, shows the components of an alkaline battery.

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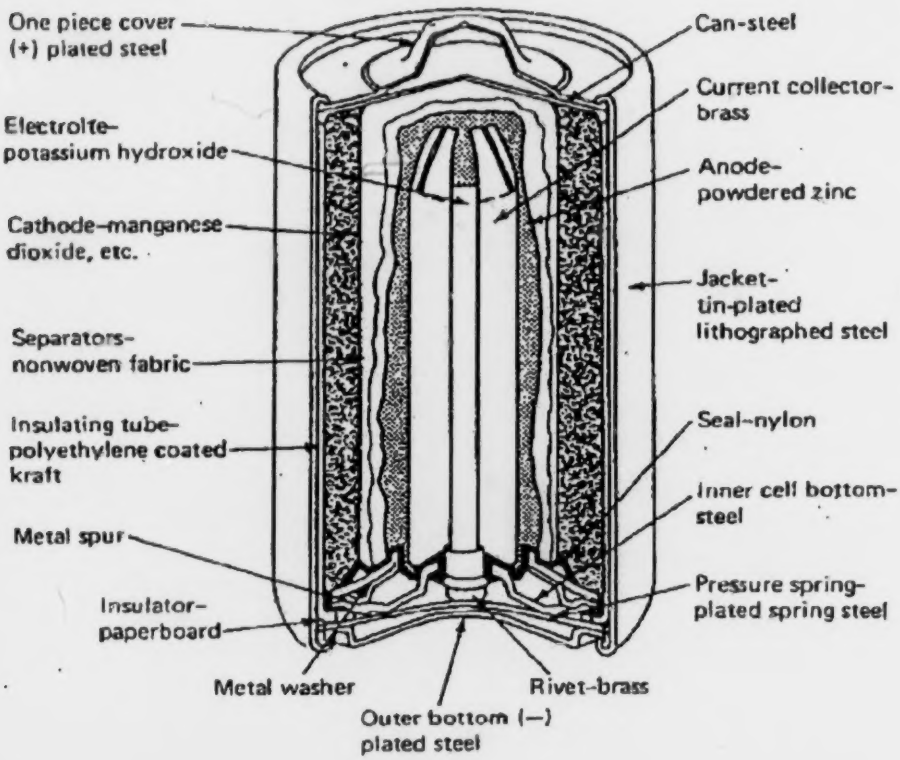
[1] A "battery" also is known as an "electrochemical cell." Among the commercial sizes are AAA, AA, C, D, and 9-volt.



A detrimental characteristic of alkaline batteries has been corrosion of the zinc after partial discharge. Such corrosion produces hydrogen gas, which exerts internal pressure that causes some cells to leak. Before the invention that is the subject of this petition, mercury was widely added to batteries to inhibit corrosion: mercury amalgamates with the zinc and inhibits hydrogen formation. However, mercury is an environmental pollutant, and extensive effort has been devoted to reducing or eliminating the mercury content in alkaline batteries.

The patent provided a novel way to identify a characteristic of zinc that could produce non-leaking batteries without addition of mercury. Zinc with this

characteristic is termed "low expansion zinc." Low expansion zinc incurs less than a 25% post-partial discharge gel expansion. When zinc with this characteristic is used in zero-added-mercury batteries, the batteries do not leak after partial discharge. The technology was so successful that it has been licensed by Duracell, Rayovac, Panasonic, and others in the industry and continues to be used today in almost every zero-mercury-added alkaline battery.

As relevant here, the patent expressly describes a test for determining the presence or absence of this gel expansion characteristic in selected zinc powders. Col. 4-Col. 5.[2] According to that test, the zinc powder is mixed with other material to create a gel (4:14-16), which is placed into a "measurement cell" (4:45). The measurement cell is partially discharged (to 15% depth of discharge) for a certain period of time (161 minutes) at a certain current (2.88 amperes – "2.88A") running through it (5:1-4), and the gel is then removed from the cell, placed in containers, and heated (5:12-26). How much the gel expands after 24 hours determines whether the zinc is the desired "low expansion zinc." 4:13; 5:42. The claimed zero-mercury-added batteries use zinc powder that, if tested, would expand less than 25% after partial discharge in gelled form and hence is the "low expansion zinc."

The patent claims a battery made with this low expansion zinc. Claim 1 states:

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[2] The patent, U.S. Patent No. 5,464,709, is contained in the Supplemental Appendix to this petition.

> *1. An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode component, and an anode gel comprised of zinc as the active anode component, wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell and said zinc anode has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.* [3]

Additional dependent claims added further limitations, but the dispute here focuses on the language of claim 1.

II. THE DISPUTE OVER CLAIM MEANING.

Energizer initiated a proceeding in the International Trade Commission in 2003 alleging that a number of companies ("Importers") were importing batteries that infringed this patent, in violation of 19 U.S.C. § 1337. This case has turned

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[3] Depth of discharge means the extent to which the energy of the zinc powder has been depleted. The available energy is dependent upon the amount of zinc powder. *See* 2005 Ct. App. JA14414-16 from the first appeal (No. 05-1018) (Dr. Newman testifying that "Faraday's [L]aw describes how much material reacts in an electrochemical reaction in relationship to the amount of charge passed."). In accordance with Faraday's Law, the amount of zinc powder that must be subjected to a discharge current of 2.88A for a period of 161 minutes in order to achieve a 15% depth of discharge is calculated to be 63 grams. *See* 2005 Ct. App. JA14394 (No. 05-1018) (Dr. Newman explaining how the Faraday's Law calculation, using the discharge parameters, results in the mass being 63 grams of zinc.). That is why the measurement cell uses 63 grams of zinc powder. 4:38-5:45.

on the meaning of the term "said zinc anode" and what follows it in the claim. In particular, the dispute has been over whether the claims apply to batteries in which the zinc would show an under-25% "gel expansion" if run through the discharge test procedure, as described in the specification, or whether the claims require that the specific anode gel inside the battery has itself already been subjected to discharge and tested for expansion.

The language of the claims admits the former reading. It says that the "zinc anode" "has" a certain gel expansion "after being discharged" under certain conditions. 10:62-64. That language, common in scientific descriptions of a substance's properties, is readily understood to refer to zinc (in the anode of the battery) that has a certain property – namely, that it would produce the claimed expansion if subjected to the test described in the specification. The prosecution history strongly confirms that the patentee meant the battery's zinc, not the whole anode gel of the battery, to have the under-25% gel expansion characteristic. The claim originally referred to the "zinc anode gel," but the patentee amended the language to delete "gel," thus focusing on the zinc rather than the gel itself. The patentee so explained in submitting the amendment:

> Claims 45, 48 and 49 have been amended to correct a grammatical error. It is the zinc which is to be tested, as set forth in the specification.

See Ct. App. JA2402. The Examiner allowed the claims after this amendment, indicating her

understanding and consent to the meaning set forth by the patentee.

Critically, moreover, the experts for both sides agreed that the invention, and what the claims were intended to cover and what they understood the claims did cover, was a battery with zinc that had the low expansion property in the natural sense that the zinc *would* produce an expansion of less than 25% *if* submitted to the gelling, discharge, heating, etc. testing process. Indeed, they agreed that the alternative understanding – that each battery's anode gel has itself been subjected to the testing discharge limitations – is non-sensical and illogical, because no company sells partially discharged batteries and such batteries would require 63 grams of zinc, an amount which no commercially available alkaline battery contains. *See* Pet. App. 123a.

Specifically, the testimony of experts called by both the Importers and Energizer was that "said zinc anode" in the context of the discharge limitations of the claims required that the zinc powder be low expansion zinc. The Importers' expert, Dr. Stanley Whittingham, rejected the alternative proposal since he was not aware of any commercial batteries that contained 63 grams of zinc. Ct. App. JA13829-13830. He went on to testify, under direct examination:

> Q. So let me go back again, Dr. Whittingham, and ask, what is required by the limitation in Claim 1 of said zinc anode has the gel

> expansion of less than 25 percent after being discharged under the discharge conditions?
>
> A. As I interpret this, one can read the zinc used in the electrochemical cell must have a gel expansion of less than 25 percent. And it must be --

Id. One of Energizer's experts, Dr. John Newman, a chemical engineering Ph.D. and professor at the University of California, Berkeley, testified as follows:

> Q. Now, that person [of ordinary skill in the art], do you have an opinion as to whether – as to how he would have understood the term zinc anode as it appears in this claim?
>
> A. Yes.
>
> Q. And what is that opinion?
>
> A. He would have understood this to be the zinc that is going into the electrochemical cell.
>
> Q. And why in your opinion would he have had that understanding?
>
> A. He would have read the patent.
>
> Q. And what in the patent would have told him what this term was making reference to?
>
> A. In column 4, line 12, it says zinc is used as the active material in the cells of this invention, preferably the zinc is low expansion zinc and is in powder form. Powdered zinc is combined with a binder, optional components,

> and an amount of the electrolytic solution to [form] a gel. Typically, the anode gel expands when it is discharged and then stored.
>
> So this is the sort of thing he would be looking at as the zinc that's going into the battery.

Ct. App. JA14384-14385. Energizer's other expert, Dr. Thomas O'Keefe, opined that a person of ordinary skill in the art in 1990 would have believed that the term "zinc anode" refers to zinc powder that was used in the anode of the battery and that "zinc anode" in claim 1 is referring back to the active component in the anode, which is the zinc. Ct. App. JA11495.

The Administrative Law Judge (ALJ) of the ITC concluded that the term "said zinc anode" in the claims refers to the zinc, not the anode gel itself. The ALJ relied upon the amendment in the prosecution history, wherein the patentee deleted the term "gel" from the term "said zinc anode gel," and explained that "[i]t is the zinc which is to be tested as set forth in the specification."[4]

The Commission, for its part, stated in *Energizer I* that the alternative proposed construction "contemplates using 63 grams of zinc (the amount of zinc used in the zinc anode gel mix of the test cell) and there is no dispute that no commercial

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[4] *See* Pet. App. 136a-142a, excerpted from the ALJ's Initial Determination. The entirety of the Initial Determination may be found at pages JA690-924 of the Confidential Joint Appendix ("Ct. App.") for the underlying Federal Circuit case, No. 2007-1197.

alkaline cell employs 63 grams of zinc in its anode gel." *See* Pet. App. 123a; note 3, *supra*. Indeed the Commission called the alternative proposal "illogical" in *Energizer III*. Pet. App. 65a.

III. THE RULINGS BELOW.

The Federal Circuit rulings in this case turned on claim construction. In 2006, after the ITC had held the claims indefinite on the ground that "said zinc anode" had no identifiable antecedent in the claim language, Pet. App. 124a-125a, the Federal Circuit reversed. The court concluded "that 'anode gel' is by implication the antecedent basis for 'said zinc anode.'" Pet. App. 88a.

On remand, the ITC then held that the claims were invalid, on a basis that turned on claim construction. According to the ITC, *Energizer II* compelled it to conclude that the discharge limitations in the claim had to be satisfied for each claimed battery's specific anode gel, rather than referring to an inherent characteristic of the zinc powder in the anode gel (which could be established by testing). It then concluded that since the written description (specification) part of the patent described the discharge limitations as a characteristic of the zinc powder, the written description did not actually describe what was claimed. Pet. App. 63a-67a.[5] Having thus construed the claim to create a gulf between it and the written

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[5] The ITC also found the claims to not be infringed since none of the Importers' batteries contained 63 grams of zinc. Pet. App. 69a.

description, the ITC held that the claims flunked the "written description requirement." Pet. App. 67a.[6]

A divided panel of the Federal Circuit affirmed the ITC's judgment. Pet. App. 4a. The two judges in the majority concluded that the patent claims were invalid, and though they invoked different invalidity doctrines, both conclusions rested squarely on their common approach to the claim construction issue. Specifically, both Judge Schall and Judge Linn rejected the construction of the claims that was supported in the written description and testified to by witnesses for both parties as the only logical, and intended, meaning – that the zinc have the property that, if tested as indicated, it would produce the low-expansion result. They did so while recognizing that this was the intended meaning (Pet. App. 21a-22a, 29a) and that reading the claim to apply to the battery's anode gel "can hardly be said to reflect what the applicant regarded as his invention" (Pet. App. 29a; *see also* Pet. App. 24a, 12a). Based on that position, Judge Schall agreed with the ITC's conclusion that the gap between claim and specification meant invalidity for failure to satisfy the written description requirement. Pet. App. 24a-25a. Judge Linn, on the other hand, drew the conclusion that the claims were indefinite for failure to be clear about whether they referred to the zinc or to the specific battery anode gel. Pet. App. 30a. But

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[6] The Federal Circuit has held that Section 112, ¶ 1, beyond requiring that the description enable a skilled artisan to make and use an invention, requires that the description adequately describe what is claimed. *See Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1562-63 (Fed. Cir. 1991).

both conclusions simply rested on the refusal to adopt the common sense construction.

Judge Newman dissented. She noted that "the complexities of patent claim writing are notorious":

> There are few, if any, legal documents more difficult to craft, more fraught with pitfalls than patent applications; and patent applications are so universally a challenge to the non-specialist, that this Court has converted the judicial need to understand them into an unruly cottage industry called "claim construction."

Pet. App. 32a. She adopted the sensible construction, observing that the parties understood the intended and logical meaning of the claims:

> All parties, including the Intervenors, agree that a person of ordinary skill in the field of the invention would understand what was invented, described, and claimed, despite less than perfect clarity if the claims are removed from their foundation in the specification.

Pet. App. 33a.

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> Where, as here, it was agreed that a person of ordinary skill in the field of the invention would understand that the specification describes and the claims state the parameters of the test for gel expansion, and do not require every battery cell to be discharged before it is sold, the proper claim construction must reflect that undisputed understanding. There is no warrant for the Commission and

> my colleagues to adopt an unsupportable view of the claims, and then invalidate the claims because that view is not supported.

Pet. App. 43a.

REASONS FOR GRANTING THE PETITION

This case presents an opportunity for this Court to restore a focus on substance and sense to the task at the heart of the bulk of patent cases – claim construction. Disagreement over the meaning of patent claims is the most pervasive issue in patent litigation. Most patent cases turn on the infringement or validity of the patent claims, and to reach those issues, a court usually must construe the claims.

The fundamental goal of claim construction is to "ascertain[] the invention," by reference to the entire document. *United States v. Adams*, 383 U.S. 39, 49 (1966) ("[C]laims are to be construed in the light of the specifications and both are to be read with a view to ascertaining the invention."). Yet the Federal Circuit has, in a number of cases, conducted claim construction as a hypertextual, almost mechanical exercise that loses sight of its proper objective: to capture the invention as accurately as possible in order to ensure a commensurate patent reward. That misguided approach destroyed Energizer's important patent in this case, as it has many other patents.

There is urgent need for clarification, as confirmed by the Federal Circuit's attempt to address claim construction principles *en banc*. *Phillips v. AWH Corp.*, 376 F.3d 1382 (Fed.

Cir. 2004). The clarification must reflect the basic recognition that, given the inevitable imperfections of language, the patent system cannot continue to fulfill its mission of spurring invention unless claim construction is returned to a more context-dependent, realistic inquiry to resolve genuine linguistic uncertainty in favor of a sensible definition of what the patentee invented. Clarification along just those lines is the natural next step following this Court's recent decisions resolving matters fundamental to patent law based on appreciation of the difficulties of patent language, the need for context-dependent interpretation, and the essential role of common sense and the skilled artisan's perspective. *See Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 389 (1996); *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 37 (1997); *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731-32 (2002); *KSR Intern. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742 (2007); *eBay v. MercExchange, L.L.C.*, 547 U.S. 388 (2006).

The analyses by two members of the panel in this case exemplifies claim construction approaches that lose sight of the "does this make sense" question that should drive the inquiry. The claim construction approach of the panel majority nakedly refuses to adopt the meaning that captures the invention as the patentee described it in the patent, as the patentee explained it during prosecution, and as the parties' own experts testified how skilled artisans understood it.

It makes no sense to say, as the majority did, that the claim language would have to be rewritten

to adopt the plainly intended meaning, where people skilled in the art understood that very meaning and the alternative is illogical. Because of the stark and undisputed gulf between common-sense, skilled-artisan understanding, and the majority's patent-invalidating approach, this case is a good vehicle for re-establishing a sensible realism in claim construction as the natural next step in this Court's recent course of clarifying important foundations in patent law along such lines.

I. THE PROPER APPROACH TO CLAIM CONSTRUCTION IS IN NEED OF THIS COURT'S CLARIFICATION.

Claim construction necessitates balancing the public notice function of patents with the sometimes competing policy of ensuring a fair scope of protection for patentees.[7] In this case, however, neither policy was served by the rejection of the sole logical claim construction, as clearly understood by the skilled artisans of Energizer's competitors, and the consequent robbing of the patentee of his fair scope of protection. Instead of adopting the claim construction that was set forth in the specification and prosecution history, and indeed the one that the parties and the experts agreed was the only logical construction, two members of the Federal Circuit panel looked at the claim in a vacuum and decided that the language of the claim required a finding of invalidity regardless of what skilled artisans, and

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[7] *See* Brief Amicus Curiae of the United States, at 3, in *Phillips*, Nos. 03-1269, -1286 (Fed. Cir., Sept. 20, 2004), *available at* http://www.uspto.gov/go/com/sol/ambriefs.htm (hereafter "U.S. *Phillips* Brief").

the Patent and Trademark Office (PTO), understood the language to mean in context. Judge Newman took a diametrically opposed approach and vigorously criticized the panel majority's approach to claim construction. This conflict among the judges in this case confirms and illustrates a well-recognized divergence in approaches to claim construction that it is vital for this Court to address.

A. The Federal Circuit's Two Approaches to Claim Construction.

Claim construction in the Federal Circuit is plagued by a longstanding division between two approaches. One reflects a common-sense substantive focus aimed at arriving at a claim construction that reflects the invention as it is understood by skilled artisans from the documents as a whole. This approach proceeds from a fundamental appreciation of the difficulties of claim drafting and, hence, a reluctance to say that the claim language simply cannot be read to capture the invention.[8] The other approach readily finds language that constrains claim construction to preclude capturing the invention. This approach reflects an often rigid and narrow focus on claim words by themselves, commonly without first fully considering the full document's (and prosecution history's) context and skilled artisans' understandings, and an accompanying disposition to

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[8] *Eastman Kodak Co. v. Goodyear Tire & Rubber Co.*, 114 F.3d 1547 (Fed. Cir. 1997), *abrogated by, Cybor Corp. v. FAS Tech., Inc.*, 138 F.3d 1448, 1456 (Fed. Cir. 1998) (*en banc*); *Nazomi Commc'ns, Inc. v. Arm Holdings, PLC*, 403 F.3d 1364 (Fed. Cir. 2005); *Rhine v. Casio, Inc.*, 183 F.3d 1342 (Fed. Cir. 1999).

declare that the words cannot accommodate what is clearly the invention, or the intended meaning, even at the price of invalidating the patent.[9]

These two schools of interpretation can be characterized as the pragmatic approach and hypertextualism. *See* Craig Allen Nard, *A Theory of Claim Interpretation*, 14 Harv. J. L. & Tech. 1, 4-6 (Fall 2000) ("*Nard*"). Professor Nard describes the pragmatic approach in the following manner:

> [T]he pragmatic textualist approach, while embracing the importance of textual fidelity and internal coherence, also emphasizes the relevance of extrinsic context and industry custom, of which patent law's "person having ordinary skill in the art" ("PHOSITA") is representative. This hypothetical artisan is ... valued by the pragmatic textualist as an interpretive tool because the artisan has knowledge of the underlying assumptions present in his technological community and is sensitive to the facts on the ground. Indeed, patents are written by and for persons having ordinary skill in the art, and to limit claim construction to the intrinsic record is, for the pragmatic textualist, a legal fiction.... Because the meaning of a word cannot be "divorced from the circumstances in which it is used," a pragmatic textualist approach

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[9] *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336 (Fed. Cir. 2002); *Interactive Gift Exp., Inc. v. Compuserve Inc.*, 256 F.3d 1323 (Fed. Cir. 2001); *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350 (Fed. Cir. 1999), *cert denied*, 529 U.S. 1037 (2000).

> would consider extrinsic evidence *without* a threshold determination of intrinsic ambiguity.

Id. at 6 (internal citations omitted). Professor Nard describes hypertextualism as:

> [a] highly formalistic approach [that] stresses textual fidelity and internal textual coherence, but eschews extrinsic evidence as an interpretive tool, portraying its use as "rarely, if ever," proper. Although hypertextualism posits that expert testimony may be used if the intrinsic record is ambiguous, a hypertextualist judge rarely finds ambiguity. If ambiguity is found, expert testimony may be used to educate the judge in the relevant technology - not for the purpose of interpreting the ambiguous claim language.

Id. at 5 (internal citations omitted). Professor Nard pointed out many of the difficulties with the hypertextualist approach, including that it "ultimately cannot deliver on its promise of greater certainty and uniformity." *Id.* at 9.[10]

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[10] *Nard* explained that "[t]he patent code explicitly empowers the PTO to examine patent applications and gauge patentability through the eyes of the artisan skilled in the relevant technology" and that "[t]he examiner, during the examination process, places himself in the shoes of a PHOSITA," indeed "is, to a large extent, part of the technological community to which the invention, the inventor, and the inventor's competitors belong." *Id.* at 8. Yet, "[b]y refusing to consider the artisan's perspective, the Federal Circuit assigns meaning to a claim term without employing the congressionally mandated analytical framework set forth in

In the Federal Circuit's *Markman* decision (*Markman I*), the *en banc* court, in addition to holding that claim construction is for the judge rather than the jury, stated that expert evidence was to be used only as an educational tool, not for "clarifying ambiguity in claim terminology." *Nard* at 17, *citing Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 986 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996). This Court agreed as to who decides claim construction (judge, not jury). *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384 (1996) (*Markman II*). The Court's accompanying analysis pointed away from hypertextualism and toward pragmatic, common-sense interpretation focused on skilled artisans' understandings, noting that "construction of terms of art" had "evidentiary underpinnings," *id.* at 390, and that judges may need to receive extrinsic evidence to understand the terms used in the patent, *id.* at 387. *See also* page 31, *infra*. But this Court did not provide definitive guidance on the substance of claim construction.

As a result, radically different approaches continued to war with one another among judges on the Federal Circuit, so that different opinions, depending on the panel and author, took sharply different approaches. For example, in the prominent decision in *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1584 (Fed. Cir. 1996), the panel held that the district court erred in considering expert

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Title 35"; "the judge, by turning a deaf ear to the skilled artisan, replaces the artisan and discerns claim meaning by examining the intrinsic record through her own eyes." *Id.* at 8-9.

testimony in the face of an "unambiguous" intrinsic record, building on the majority's position in *Markman I*. Shortly thereafter, the pragmatic and evidentiary approach prevailed in *Fromson v. Anitec Printing Plates, Inc.* 132 F.3d 1437, 1444 (Fed. Cir. 1997), *abrogated by, Cybor Corp. v. FAS Techs., Inc.* 138 F.3d 1448 (Fed. Cir. 1998) (*en banc*), where the panel (speaking through Judge Newman) considered extrinsic evidence from the very outset.

Because of the technical nature of patents, and the non-technical background of most of federal judges, the unavoidable reality is that – most clearly in district courts – understanding of patents commonly requires attention to sources of expertise outside the patent document. Within two years of this Court's *Markman II* decision, the Federal Circuit was forced to address *en banc* what kind of appellate review applies when district courts make findings about skilled artisans' understandings – and hence the role of such understandings in proper claim construction. *See Cybor*, 138 F.3d at 1448. The various opinions in *Cybor* reflected the divergence in approach, with the common-sense, skilled-artisan understanding camp losing. The majority dismissed this Court's *Markman II* statements about evidentiary underpinnings in claim construction as mere "prefatory comments" that need not limit the Federal Circuit's power of *de novo* appellate review of all aspects of claim construction. *Id.* at 1455. Judge Mayer, joined by Judge Newman, concurred. *Id.* at 1463-72. Judge Rader dissented from the pronouncements on claim interpretation and predicted the difficulty of continuing to treat claim construction from a hypertextualist perspective:

> Under the guise of setting standards for claim construction, this court instructs experienced trial judges that they may use experts to understand, but not to interpret, the claim terms. As a matter of logic, this instruction is difficult to grasp. What is the distinction between a trial judge's understanding of the claims and a trial judge's interpretation of the claims to the jury? Don't judges instruct the jury in accordance with their understanding of the claims? In practice, how does this court's lofty appellate logic work? As this court acknowledges, a trial court must often resort to experts to learn complex new technologies. *See, e.g., Markman I,* 52 F.3d at 986. What happens when that learning influences a trial judge's interpretation of the claim terms? Are trial judges supposed to disguise the real reasons for their interpretation? How will this perverse incentive to "hide the ball" improve appellate review?
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> ***
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> In any event, it seems a contradiction to bar those of skill in the art at the time of invention from a search for the meaning of terms to one of skill in the art at the time of the invention. In effect, the *en banc* opinion has *sub silentio* redefined the claim construction inquiry as "how a lawyer or judge would interpret the term."

Id. at 1474-75.

By 2004, the Federal Circuit recognized the importance and pervasiveness of the fundamental divergence of approach to the substance of claim construction analysis by granting *en banc* review in *Phillips v. AWH Corp.*, 376 F.3d 1382 (Fed. Cir. 2004). The *Phillips* court was to consider broad questions about claim construction – particularly, the strength of any presumptive conclusion about meaning from the claim language alone, as well as the role of the principle of avoiding constructions that needlessly produce invalidity.[11]

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[11] "1. Is the public notice function of patent claims better served by referencing primarily to technical and general purpose dictionaries and similar sources to interpret a claim term or by looking primarily to the patentee's use of the term in the specification? If both sources are to be consulted, in what order?

* * *

5. When, if ever, should claim language be narrowly construed for the sole purpose of avoiding invalidity under, *e.g.*, 35 U.S.C. §§ 102, 103 and 112?

6. What role should prosecution history and expert testimony by one of ordinary skill in the art play in determining the meaning of the disputed claim terms?

* * *

Judge Rader separately asked for comment on the following: "Is claim construction amenable to resolution by resort to strictly algorithmic rules, e.g., specification first, dictionaries first, etc.? Or is claim construction better achieved by using the order or tools relevant in each case to discern the meaning of terms according to the understanding of one of ordinary skill in the art at the time of the invention, thus entrusting trial courts to interpret claims as a contract or statute?" *Phillips*, 376 F.3d at 1383-84.

The outpouring of amicus participation in *Phillips* showed the importance of the issues to the daily task of claim construction – in lawyer's offices as they seek to advise clients, in district courts as parties and judges seek to construe patent claims, and in the Federal Circuit, where claim construction issues arise in almost every patent case.

But *Phillips* did not solve the problem. Evidently trying to achieve a resolution through consensus, in truth *Phillips* papered over fundamental differences in perspective. It contained language suggesting claim-term primacy while also stressing the role of the written description in interpreting claim terms. *Phillips*, 415 F.3d at 1312-14. *Phillips* did not resolve the basic question of judges' versus artisans' understanding featured by Judge Rader. The *en banc* court seemed unable to extricate itself from its own precedent, ironically, the very same problem that prompted the court to sit *en banc*. Lawyers can now find something to quote from *Phillips* on either side of most construction issues.

In one respect, *Phillips* turned the Federal Circuit's back squarely on one important aspect of the pragmatic approach to claim construction. It essentially eliminated the venerable principle that patent construction should be conducted with an eye on whether one construction rather than another would invalidate the patent claim – a principle that reflects not only respect for the statutorily directed presumptive correctness of the PTO's award of the patent, 35 U.S.C. § 282, but also the common-sense notion that the patentee is most likely, and would be understood by skilled artisans, to be trying to claim his advances over prior art (especially where this

written description clearly describes those advances). *Phillips*, however, held that a look at invalidity consequences is improper until all other sources of construction are exhausted and that, if the court arrives at a construction from those other sources (as it almost invariably will), the consequence of invalidity cannot change the result. 415 F.3d at 1327-28.

The basic divergence in approach to claim construction has continued after *Phillips*, producing opinions (depending on the panel) that either follow common sense and skilled artisans' understandings to capture the invention or, as here, disregard or override such understandings because of the appellate judges' own textual conclusions.[12] This divergence boiled over in 2006, when, soon after *Phillips*, the Federal Circuit declined *en banc* review in *Amgen Inc. v. Hoechst Marion Raussel*, Inc., 457 F.3d 1293 (Fed. Cir. 2006), *reh'g en banc denied,* 469 F.3d 1039 (Fed. Cir. 2006), *cert. denied,* 127 S. Ct. 2270 (2007). The judges issued six different opinions.

Judge Michel, joined by Judge Rader, dissented from the denial of rehearing, criticizing:

> the premise that claim construction is always a purely legal exercise, devoid of factual content. We have likened claim construction

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[12] *Compare Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1363 (Fed. Cir. 2008) (the claim "can and should be interpreted as the patentees intended") *with Lucent Tech., Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1215-16 (Fed. Cir. 2008) (upholding a claim construction that was "not supported by the sole embodiment described in the specification").

> to statutory construction. I believe that this analogy is open to serious question. In interpreting statutes, a judge, whether trial or appellate, essentially asks himself/herself, "What does the disputed term mean to me, the judge, as an artisan in the law?" With claim construction, on the other hand, the judge is supposed to inquire, essentially, "How would the average artisan in the relevant field of technology understand the disputed claim terms in the context of the rest of the patent, the prosecution history, and the prior art?"

Id. at 1040. Judge Newman opined in her dissent:

> The record in the district court contains evidence, presented by persons experienced in this field of science, that the limitation to "a therapeutically effective amount" distinguishes the genetically engineered EPO from known EPO isolates. The district court construed the claims from the viewpoint of the skilled artisan, upon reading and understanding the specification and the restrictions flowing from the prosecution history. My concern about this court's methodology is that the panel majority does not apply these standard tools of claim construction.
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> ***
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> The court in this case has departed from . . . fundamental principles. We should speak *en banc* to clarify that it is appropriate, and

> necessary, to look at what has in fact been invented, prosecuted, and patented, and construe the claims accordingly.

Id. at 1041-42. Judge Rader in his own dissent added:

> Indeed, in this case, the trial court held a nine-day trial, including testimony of artisans informed of the meaning of "therapeutically effective amount" at the time of invention. The trial court, while noting that it did not rely on expert testimony to construe the claim, specifically noted that such testimony offered during the trial fully supported the district court's claim construction. Given this court's rule toward limited reliance on extrinsic evidence in claim construction, *Forest Labs., Inc. v. Abbott Labs.*, 239 F.3d 1305, 1311 (Fed. Cir. 2001) (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1584 (Fed. Cir. 1996)), district court judges have learned to disclaim any reliance on expert testimony. Yet, in this case the trial court took testimony for nine days-hardly necessary if the judge was merely reading and relying upon the intrinsic patent document alone.

Id. at 1044.

This Court denied certiorari in *Amgen*, but *Phillips* was still new, and the legal issue of the substance of the proper approach to claim construction was not cleanly presented. The certiorari petition featured the question of appellate deference to trial court factual finding, and it did so

in circumstances where the respondent had a strong argument that, on the particular patent at issue, the Federal Circuit (unlike the district court) had correctly identified skilled artisans' understanding of the patent document as a whole. The present petition, in contrast, focuses directly on the court dividing question of whether such understandings must govern as a matter of law. Here, there is no dispute that the Federal Circuit's ruling rejects the principle that such a skilled artisan's understandings must govern claim construction. This case is therefore a particularly good vehicle for resolving that fundamental issue.

The division among Federal Circuit precedents is so pronounced that commentators and casebook editors routinely describe the Federal Circuit's claim construction process as a "crapshoot," "confusing," "creating a lovely shade of gray," "unstable and marred with criticism," "a broken system that has debilitated claims," and in a "fractured state." *See, e.g.*, Andrew B. Dzeguze, *Did Markman and Phillips Answer the Right Question? A Review of the Fractured State of Claim Construction Law and the Potential Use of Equity to Unify It*, 15 TEX. INTELL. PROP. L.J. 457, 478 (Spring 2007); Russell B. Hill and Frank P. Cote, *Ending the Federal Circuit Crapshoot: Emphasizing Plain Meaning in Patent Claim Interpretation*, J.L. TECH., 42 IDEA 1 (2002); Kelly Casey Mullally, *Patent Hermeneutics: Form and Substance in Claim Construction*, 59 FLA. L. REV. 333, 334 (2007).

This case is exemplary. Judges Schall and Linn took a hypertextualist approach to the term "said zinc anode," refusing to adopt the sensible pragmatic

construction that would retain the validity of the claims. And they did so even while recognizing that there was only one logical interpretation of the claims – "said zinc anode" means "zinc," whose inherent characteristic can be established by testing at any time. People of skill in the art understand that the anode is powdered zinc.[13] This interpretation is exactly what is set forth in the specification and the prosecution history, and was agreed upon by the experts.

The Federal Circuit has thus failed to bring order to the most fundamental issues of claim construction. Its efforts to do so on its own have proved unsuccessful. It is time for this Court to step in.

II. THIS COURT'S PRECEDENTS SUPPLY PROPER CLAIM CONSTRUCTION PRINCIPLES.

Under this Court's precedents, the proper approach to claim construction is one that is substance-driven, not hypertextualist. Examiners read claims from the perspective of skilled artisans (*Manual of Patent Examining Procedure* § 2106(II)(C)), and patents are generally drafted for skilled artisans. *See* 35 U.S.C. § 112, ¶ 1; *Carnegie Steel Co. v. Cambria Iron Co.*, 185 U.S. 403, 441 (1902). Claim construction, while always recognizing that claims define the protected invention, must look to the entire patent document to determine how to construe the claim terms, constantly with an eye on the critical question of how sensibly to read the

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[13] Note that the illustration of the alkaline battery (at p. 3, *supra*) denotes the anode as "powdered zinc."

claims so as to capture the invention as skilled artisans would understand it, and to avoid needlessly adopting a patent-invalidating construction.[14] This pragmatic approach gives patents their due and provides the proper public notice of patent scope to those skilled in the art.

This Court set out the basic principles in *Bates v. Coe*, 98 U.S. 31, 38-39 (1878) (cited in *Markman II*, 517 U.S. at 389). Although patentees are limited to their claims, notwithstanding greater breadth in the specification:

> it is equally true that the claims of the patent, like other provisions in writing, must be reasonably construed, and in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and meaning of the language employed in the claims .... In construing patents, it is the province of the court to determine what the subject-matter is upon the whole face of the specification and the accompanying drawings.

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[14] Patents are not unique in requiring interpretations that avoid illogical results. In statutory interpretation, literalism gives way when it produces absurd results. *See*, e.g., *United States v. Kirby*, 74 U.S. 482, 486-87 (1868); *Webster v. Reprod. Health Servs.*, 492 U.S. 490, 515 (1989); *United States v. Granderson*, 511 U.S. 39, 47 n.5 (1994). The same is true for contract interpretation. *See, e.g., Beanstalk Group, Inc. v. AM Gen. Corp.*, 283 F.3d 856, 860 (7th Cir. 2002) (Posner, J.); *Great Plains Real Estate Dev., LLC v. Union Cent. Life Ins.* Co., 536 F.3d 939, 946 (8th Cir. 2008).

In *Klein v. Russell,* 86 U.S. (19 Wall.) 433, 466 (1873), the Court already had insisted that "[t]he subject is to be examined in the light of [the] specifications and of [the] sets of claims." Importantly, the Court emphasized a vital interpretive principle: "The court should proceed in a liberal spirit, so as to sustain the patent and the construction claimed by the patentee himself, if this can be done consistently with the language which he has employed." *Id.* Even that principle was not new, for the Court earlier had ruled that "[p]atents ... are to receive a liberal construction, and under the fair application of the rule, *ut res magis valeat quam pereat,* are, if practicable, to be so interpreted as to uphold and not to destroy the right of the inventor." *Turrill v. Mich. S. & N. Ind. R.R.,* 68 U.S. (1 Wall.) 491, 510 (1864). The principle of avoiding patent-invalidating constructions, if possible, reflects the deference due the patent-issuance decision of the expert PTO - as required by Congress's command that patents "be presumed valid." 35 U.S.C. § 282.

In *Smith v. Snow,* 294 U.S. 1, 14 (1935), the Court confirmed the necessary substantive focus. It explained that "if the claim [is] fairly susceptible of two constructions, that should be adopted which will secure to the patentee his actual invention." *Id.* In *United States v. Adams,* 383 U.S. at 49, the Court again stressed that "claims are to be construed in the light of the specifications and both are to be read with a view to ascertaining the invention."

In *Markman II,* in establishing claim construction as a matter for judges rather than juries, the Court relied on *Bates* and emphasized that the task of construction was one of substance-

focused understanding of the document as a whole. *Markman II*, 517 U.S. at 389. Claim construction requires a "necessarily sophisticated analysis of the whole document, required by the standard construction rule that a term can be defined only in a way that comports with the instrument as a whole." *Id.* (citing *Bates* and other sources). Any proposed interpretation must be evaluated "in relation to the overall structure of the patent"; the issue is whether it "fully comports with the specification and claims and so will preserve the patent's internal coherence." *Id.* at 390. Moreover, the Court explained that, because "it cannot be expected . . . that judges will always possess the requisite knowledge of the meaning of the terms of art or science" using the patent, "it *often* becomes *necessary* that they should avail themselves of the light furnished by experts relevant to the significance of such words and phrases." *Id.* at 387 (quoting A. Walker, Patent Laws, § 189, at 173 (3d Edition 1895) (emphasis added). For that reason, "[w]here *technical terms* are used, or where the *qualities of substances* . . . mentioned or any similar data *necessary to comprehension of the language of the patent* are unknown to the judge, the testimony of witnesses may be received upon these subjects, and any other means of information be employed." *Id.* at 388 (emphasis added; citations omitted). The Court acknowledged that claim construction is a "mongrel practice" that has "evidentiary underpinnings." *Id.* at 378, 390.

The context-dependent approach to claim construction is reinforced by other recent decisions. In *Warner-Jenkinson*, 520 U.S. at 34-35, the Court, in affirming the persistence of the doctrine of

equivalents as a kind of infringement beyond the literal meaning of claim terms, recognized that the doctrine responds to the need for realism and some flexibility in protecting inventions. Similarly, in *Festo*, 535 U.S. at 731-32, the Court rejected the Federal Circuit's unduly mechanical and rigid limits on the doctrine of equivalents, repudiating "literalism" in claim "interpretation" in recognition of the inevitable imprecisions of claim language. *Id.* at 731-32 (because "the nature of language makes it impossible to capture the essence of a thing in a patent application," "the clearest rule of patent interpretation, literalism, may conserve judicial resources but is not necessarily the most efficient rule"). This Court also looked with approval to the analysis of claim construction in *Autogiro Co. v. United States*, 384 F.2d 391 (Ct. Cl. 1967). *Festo,* 535 U.S. at 731. In *Autogiro*, the Court of Claims stated:

> Claims cannot be clear and unambiguous on their face. A comparison must exist. The lucidity of a claim is determined in light of what ideas it is trying to convey. Only by knowing the idea, can one decide how much shadow encumbers the reality. . . .
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> . . . Thus we find that a claim cannot be interpreted without going beyond the claim itself. No matter how clear a claim appears to be, lurking in the background are documents that may completely disrupt initial views on its meaning.

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> In deriving the meaning of a claim, we inspect all useful documents and reach what Justice Holmes called the "felt meaning" of the claim.

Autogiro, 384 F.2d at 396-97 (footnotes omitted).

Proper claim construction under those decisions can and should be orderly and systematic in striving for a substantively correct understanding, without being mechanical, blinkered, formulaic, or "algorithmic" (Judge Rader's term in the *Phillips* grant of *en banc* review, 376 F.3d at 1384). For example, *if* a claim term has a clear meaning, that meaning can generate a presumption of correctness; whereas if no "precise and well-established meaning in the art" exists, the meaning, while properly limited to the range of available meanings of the claim words, necessarily must be sought from context.[15] The specification can make clear an intended meaning, either by express definition or by clear, otherwise-unqualified characterization of the *invention*, especially statements distinguishing it from prior art. 35 U.S.C. § 112, ¶ 1. And the prosecution history, aside from showing differences among (issued or proposed) claims, can illuminate the meaning accepted by the patentee and examiner in various ways: *e.g.*, it may expressly state a narrow or broad intended meaning, or it may reveal that the examiner recognized the presence of

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[15] *On-Line Techs., Inc. v. Bodenseewerk Perkin-Elmer GmbH*, 386 F.3d 1133, 1137 (Fed. Cir. 2004); *Irdeto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1300 (Fed. Cir. 2004); *Rambus Inc. v. Infineon Techs. AG*, 318 F.3d 1081, 1088, 1094 (Fed. Cir. 2003).

multiple separate inventions in an initial application and required them to be split up into separate applications (revealing the independence of the multiple inventions).[16]

Such subsidiary principles can thus discipline and guide claim construction toward an understanding of claim language that captures what a skilled artisan would understand to be the invention. A substance-focused, sense-driven, context-dependent approach to understanding claim language can provide systematic guidance to applicants and examiners during patent prosecution and to the public thereafter. As IBM *et al.* stated in their *amicus* brief in the *Phillips* case (www.patentlyobviousblog.com/files/IBM.pdf, at 18), "[t]ying the meaning of claim terms to the principle of the patentee's actual invention reduces uncertainty."[17]

The United States' brief in the *Phillips* case discusses a number of these principles. It points out that the PTO, in examining patent applications, focuses on the context provided by the specification. U.S. *Phillips* Brief at 11 (citing PTO rule, 37 C.F.R. § 1.75(d)(1)). It stresses *Markman's* emphasis on the "'necessarily sophisticated analysis of the whole

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[16] *E.g., Honeywell Inc. v. Victor Co. of Japan, Ltd.*, 298 F.3d 1317, 1323-24 (Fed. Cir. 2002); *Rambus*, 318 F.3d at 1095.

[17] That brief notes (at 8, 9) the cacophony within the Federal Circuit, as "the meaning of patent claims is being divorced from the context of the invention itself," with an often-unjustified insistence on a "so-called 'plain meaning' [which] may be entirely divorced from the specification and file history, and thus from the intent of the patentee."

[patent] document required by the standard construction rule that a term can be defined only in a way that comports with the instrument as a whole.'" *Id.* at 15 (quoting *Markman II*, 517 U.S. at 389). Pointing to the statutory presumption of validity, the U.S. *Phillips* Brief endorses the principle of avoiding invalidating constructions where more than one interpretation is reasonable. *Id.* at 16. Much of the discussion, if not every point, supports establishment of the pragmatic approach to claim construction that Energizer urges.

Now is the time for this Court to return the Federal Circuit to proper precedent, as it has done recently in other areas of patent law. In *KSR*, 127 S. Ct. at 1731, this Court rejected the Federal Circuit's undue formalism in the law of obviousness and insisted on a common-sense approach required by this Court's precedents. In *eBay*, 126 S. Ct. at 1840-41, the Court rejected the Federal Circuit's undue rigidity in granting injunctions and insisted on a context-dependent inquiry into the appropriate remedy, consistent with venerable Supreme Court precedent. The same corrective is needed for claim construction, whose effects are even more pervasive than the issues in *KSR* and *eBay*.

III. This Case is a Good Vehicle for This Court's Review.

This case is a good vehicle for this Court to address the Federal Circuit's fundamental divergence in approach to claim construction. The issue in this case is stark. The invalidity conclusions of the two judges in the majority of the panel plainly rested on their common rejection of a claim

construction, and it is undisputed that the rejected construction is the only one that is logical and the only one that reflects the intended meaning. The case thus presents a fairly pure case where the proper claim construction, and validity itself, turn on whether the common-sense pragmatic approach or the more rigid hypertextualist approach prevails.

The opinions by Judges Schall and Linn in this case, even while acknowledging the intended and only logical scope of the claim, refused to adopt that meaning. That refusal perfectly reflects the cramped, hypertextualist approach that denigrates skilled artisans' common-sense and contextual understandings. Judges Schall and Linn, in rejecting the construction of the "said zinc anode has ..." phrase as describing a characteristic of the zinc, relied on the textual objection that such a construction would eliminate the word "anode" from the claim term "said zinc anode." But that conclusion is inconsistent with the common-sense, skilled-artisans' understanding of "said zinc anode." The anode of an alkaline battery is powdered zinc, something that was readily understood by the skilled artisan at the time of the invention as evidenced by the illustration of an alkaline battery, at page 3, *supra,* the specification, and the comments provided in the prosecution history equating "zinc anode" to "zinc." With that perspective, it is clear that the term "zinc anode" means exactly the same thing as "zinc," and interpreting "said zinc anode" in that manner was the intention of the patentee, as the intended audience of readers of the patent (skilled artisans) would readily understand.

CONCLUSION

For the reasons stated, the Petition for a Writ of Certiorari should be granted.

Respectfully submitted,

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October 30, 2008

No. 08-

IN THE

Supreme Court of the United States

ENERGIZER HOLDINGS, INC. AND
EVEREADY BATTERY COMPANY, INC., PETITIONERS,

v.

UNITED STATES INTERNATIONAL
TRADE COMMISSION, ET AL.

On Petition for a Writ of Certiorari
to the United States Court of Appeals
for the Federal Circuit

APPENDIX TO PETITION FOR WRIT OF CERTIORARI

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APPENDIX A – DECISION OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DECIDED APRIL 21, 2008

NOTE: This disposition is nonprecedential.

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

2007-1197

ENERGIZER HOLDINGS, INC.
and EVEREADY BATTERY COMPANY, INC.,

Appellants,

v.

INTERNATIONAL TRADE COMMISSION,

Appellee,

and

GOLDEN POWER INDUSTRIES, LTD., GUANGDONG CHAOAN ZHENGLONG ENTERPRISE CO., LTD., GUANGZHOU TIGER HEAD BATTERY GROUP CO., LTD., FUJIAN NANPING NANFU BATTERY CO., LTD., HI-WATT BATTERY INDUSTRY CO., LTD., NINGBO BAOWANG BATTERY CO., LTD., SICHUAN CHANGHONG ELECTRIC CO., LTD., and ZHONGYIN (NINGBO) BATTERY CO., LTD.,

Intervenors.

Appendix A

Randall G. Litton, Price, Heneveld, Cooper, DeWitt & Litton, LLP, of Grand Rapids, Michigan, argued for appellant. With him on the brief were Eugene J. Rath III and Matthew J. Gipson. Of counsel on the brief was V. James Adduci, II, Adduci, Mastriani & Schaumberg, L.L.P., of Washington, DC. Of counsel was Michael L. Doane.

Wayne W. Herrington, Assistant General Counsel, Office of the General Counsel, United States International Trade Commission, of Washington, DC, argued for appellee. With him on the brief was James M. Lyons, General Counsel.

Steven P. Hollman, Hogan & Hartson, L.L.P., of Washington, DC, argued for intervenors, Golden Power Industries, Ltd., et al. With him on the brief were Susan Cook, Jessica L. Ellsworth, and Dana Carver Boehm. Of counsel on the brief were William E. Thomson, Jr., Wei-Ning Yang, and Yoncha L. Kundupoglu, of Los Angeles, California. Of counsel was Robert B. Wolinsky, of Washington, D.C.

Appealed from: United States International Trade Commission

Appendix A

NOTE: This disposition is nonprecedential.

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

2007-1197

ENERGIZER HOLDINGS, INC.
and EVEREADY BATTERY COMPANY, INC.,

Appellants,

v.

INTERNATIONAL TRADE COMMISSION,

Appellee,

and

GOLDEN POWER INDUSTRIES, LTD., GUANGDONG CHAOAN ZHENGLONG ENTERPRISE CO., LTD., GUANGZHOU TIGER HEAD BATTERY GROUP CO., LTD., FUJIAN NANPING NAFU BATTERY CO., LTD., HI-WATT BATTERY INDUSTRY CO., LTD., NINGBO BAOWANG BATTERY CO., LTD., SICHUAN CHANGHONG ELECTRIC CO., LTD., and ZHONGYIN (NINGBO) BATTERY CO., LTD.,

Intervenors.

Appendix A

On appeal from the United States International Trade Commission in Investigation No. 337-TA-493.

DECIDED: April 21, 2008

Before NEWMAN, SCHALL, and LINN, Circuit Judges.

SCHALL, Circuit Judge.*

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* The judgment of the International Trade Commission is affirmed in separate opinions by Judge Schall and Judge Linn. Judge Newman files a dissenting opinion.

Appendix A

Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337 (2000), prohibits "[t]he importation into the United States, the sale for importation, or the sale within the United States after importation of articles . . . that infringe a valid and enforceable United States patent," id. § 1337(a)(1)(B). On April 28, 2003, Energizer Holdings, Inc. and Eveready Battery Company, Inc. (collectively "Energizer") filed a complaint with the International Trade Commission ("Commission") alleging violations of section 337 as a result of the importation into the United States, the sale for importation, and the sale within the United States after importation, of certain zero-mercury-added alkaline batteries by fourteen Chinese battery manufacturers.[1] According to Energizer, the actions of the battery manufacturers constituted infringement of claims 1–12 of U.S. Patent No. 5,464,709 (the "'709 patent").[2] In response to the complaint, the Commission instituted a section 337 investigation. 68 Fed. Reg. 32771 (June 2, 2003). During the course of the investigation, Energizer disclaimed claims 8-12, leaving only claims 1–7 of the '709 patent at issue.

On October 1, 2004, the Commission issued a notice stating that it was terminating its investigation with a finding of no violation of section 337, the reason being that the Commission

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[1]Several of those manufacturers ("Intervenors") have intervened in this case.

[2]The '709 patent is owned by Eveready Battery Company, Inc., a subsidiary of Energizer Holdings, Inc.

had determined that the asserted claims of the '709 patent were invalid for failure to meet the definiteness requirement of 35 U.S.C. § 112, ¶ 2 ("The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."). The Commission issued a decision explaining its determination on October 18, 2004. In re Certain Zero-Mercury-Added Alkaline Batteries, Parts Thereof, and Products Containing Same, Inv. No. 337-TA-493 (Int'l Trade Comm'n Oct. 18, 2004) ("Energizer I"). Energizer appealed the Commission's ruling in Energizer I to this court. Subsequently, in Energizer Holdings, Inc. v. International Trade Commission, 435 F.3d 1366 (Fed. Cir. 2006) ("Energizer II"), this court reversed the decision of the Commission that claims 1–7 of the '709 patent were indefinite and remanded the case to the Commission for further proceedings, id. at 1371. On remand, the Commission determined (i) that claims 1–7 of the '709 patent are invalid for failure to meet the written description requirement of 35 U.S.C. § 112, ¶ 1 ("The specification shall contain a written description of the invention, and the manner and process of making it . . . .") and (ii) that, if valid, the claims are not infringed by the accused imported products. In re Certain Zero-Mercury-Added Alkaline Batteries, Parts Thereof, and Products Containing Same, No. 337-TA-493 (Int'l Trade Comm'n Feb. 23, 2007) ("Energizer III"). Energizer now appeals. Because I agree with the Commission that the asserted claims of the '709 patent are

invalid for failure to meet the written description requirement of § 112, ¶ 1, I would affirm the Commission's decision in Energizer III. Deciding the case on this ground, I do not reach the issue of infringement.

BACKGROUND

I.

Commercial batteries consist of three primary components: a cathode, an anode, and an electrical conductor connecting the cathode to the anode. A battery cathode contains a reducing agent, an element or compound that releases electrons in a chemical reaction. A battery anode contains an oxidizing agent, an element or compound that receives electrons released by the cathode in a chemical reaction. When an electrical conductor connects the cathode to the anode, electrons flow through the conductor, creating an electrical current that can power electronic devices.

Commercial alkaline batteries traditionally have contained manganese dioxide as an active cathode component and zinc as an active anode component. The usage of zinc as an anode component tends to result in the corrosion of the zinc and the production of hydrogen gas, leading to battery leakage. Energizer II, 435 F.3d at 1368. To remedy this problem, battery manufacturers adopted the practice of amalgamating mercury with the zinc in the anode of the battery, which

tends to inhibit corrosion and thereby limit hydrogen gas formation. Id. The disposal of mercury-containing batteries, however, presents an environmental hazard. As a result, research scientists have sought to limit the amount of mercury contained in commercial alkaline batteries. Id.

The '709 patent issued following the discovery of a test for screening zinc metal in order to find zinc substantially free of the impurities that cause corrosion. Id. Using such zinc in commercial batteries lessens the need for mercury as an additive. Claim 1, which the parties agree claims a commercial battery, states:

> An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode component, and an anode gel comprised of zinc as the active anode component, wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell and said zinc anode has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.

II.

As noted, in response to a complaint by Energizer, the Commission initiated an investigation of various battery manufacturers who

imported batteries that allegedly infringed the '709 patent, in violation of section 337 of the Tariff Act of 1930. Energizer I at 1. On June 2, 2004, the Administrative Law Judge ("ALJ") assigned to the case issued a final determination that the battery manufacturers had imported batteries in violation of section 337. Id. at 3. The manufacturers appealed this final determination. Id. at 4.

On appeal, the Commission reversed the decision of the ALJ, issuing a final determination that the manufacturers did not violate section 337, inasmuch as claims 1–7 of the '709 patent were invalid by reason of indefiniteness. Id. at 22. In making this determination, the Commission focused upon claim 1, quoted above. Id. at 22–27. The Commission ruled that claim 1 was indefinite because the term "said zinc anode" did not have a definitive antecedent basis. Id. at 25–26. The Commission reasoned that, if "anode gel" is construed to be the antecedent basis of "said zinc anode," the claim becomes nonsensical because only the test cell wherein zinc is screened for use in a battery, not the anode gel of an actual completed battery, is subjected to the discharge process described in claim 1. Id. at 25. Alternatively, if "said zinc anode" is interpreted to refer to the zinc that is tested for integration into a battery, then the word "anode" in "said zinc anode" becomes superfluous. Id. at 25–26. Since, in the Commission's view, neither potential antecedent basis of "said zinc anode" resulted in a comprehensible claim, the Commission ruled

claim 1, and claims 2–7 which depend from it, indefinite. Id. at 26. Consequently, the Commission terminated its investigation with a finding of no violation of section 337. Id. at 22. Energizer appealed the decision of the Commission in Energizer I to this court.

III.

As noted, the definiteness requirement is set forth in 35 U.S.C. § 112, ¶ 2. To comply with § 112, ¶ 2, a claim must "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." This court has stated that "[c]laims are considered indefinite when they are 'not amenable to construction or are insolubly ambiguous . . . . Thus, the definiteness of claim terms depends on whether those terms can be given any reasonable meaning.'" Young v. Lumenis, Inc., 492 F.3d 1336, 1346 (Fed. Cir. 2007) (quoting Datamize, LLC v. Plumtree Software, Inc., 417 F.3d 1342, 1347 (Fed. Cir. 2005)). In other words, an indefiniteness inquiry "requires a determination whether those skilled in the art would understand what is claimed." Id.

In Energizer II, this court held that claim 1 of the '709 patent was not invalid by reason of indefiniteness. 435 F.3d at 1371. After noting that "[a] claim that is amenable to construction is not invalid on the ground of indefinitness," the court stated:

> Here, it is apparent that the claim can be construed. In that regard, we conclude that "anode gel" is by implication the antecedent basis for "said zinc anode." The Commission's holding of invalidity on the ground of indefiniteness is reversed.

Id. Having reversed the Commission's decision, the court remanded the case to the Commission for further proceedings. Id.

IV.

Applying what it viewed as "the claim construction mandated by the Federal Circuit," the Commission concluded that "claim 1 is invalid because the specification does not 'contain a written description of the invention . . .' as required by 35 U.S.C. § 112 ¶ 1." Energizer III at 13. The Commission came to this conclusion via a two-step process. First, it considered claim 1 itself. Starting from the premise that the "anode gel" of the claim was "the anode of the completed electrochemical cell destined for consumers," the Commission stated that "[t]he claim language 'after being discharged . . .' specifically calls for the discharge of that anode (and only that anode) in the specified manner. No other anode is recited in the claims." Id. The Commission emphasized that "[n]either the test cell [of the specification] nor its anode are [sic] recited in the claims" and that there is no language in the claims that "establishes any relationship between the anode of the

electrochemical cell and the (different) anode of the test cell, the only cell which the specification describes as being discharged in accordance with the claim language." Id. at 14 (footnote omitted). The Commission recognized that "calling for the anode of the electrochemical cell to be discharged in accordance with the parameters set out in the claims may be illogical."[3] Id. It stated, however: "[T]his is what is called for by the claims and we are not permitted to redraft those claims to supply different or missing language or to provide language to supply any missing connection between the claimed anode gel of the electrochemical cell and the unclaimed anode gel of the test cell." Id.

Turning next to the specification of the '709 patent, the Commission pointed out that "[i]n contrast to the claims, the specification does not describe the anode of the electrochemical cell as being discharged in accordance with the claim language. Rather, it only describes the anode gel (anode) of the test cell as being so discharged." Id. In that regard, the Commission noted that "the specification associates the language 'discharged for 161 minutes to 15% depth of discharge at 2.88A'

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[3] Subjecting an anode of a completed battery to such a discharge would be illogical because "according to Faraday's Law, an anode (anode gel) with zinc as the active anode component which is 'discharged' for '161 minutes to 15% depth of discharge at 2.88 A', as stated in claim 1, would have to contain 63 grams of zinc." Energizer III at 15 n.10. No commercially available battery contains anywhere near that quantity of zinc.

only with the measurement or test cell, which is not referred to in the claim. The specification does not associate the discharge language with the 'electrochemical cell' of the claims or with the anode gel (anode) of that cell." Id. (internal citation omitted). Based upon its examination of the specification, the Commission concluded that "[t]here is thus no description in the specification of an 'electrochemical cell' destined for consumers that is to be discharged for 161 minutes to 15% depth of discharge at 2.88A and no indication in the specification that the patentee was ever in possession of such a cell." Id. at 14–15.

Based upon its analysis of claim 1 and the specification of the '709 patent, the Commission determined that the asserted claims of the patent were invalid for failure to meet the written description requirement. Id. at 16. The Commission also determined that, assuming claims 1–7 were not invalid, this court's claim construction precluded a finding of infringement because no commercially available battery possesses all of the limitations recited in claim 1 of the '709 patent. Id. at 17. Energizer now appeals the Commission's decision in Energizer III.

DISCUSSION

This court has jurisdiction over a final decision of the Commission pursuant to 19 U.S.C. § 1337(c) and 28 U.S.C. § 1295(a)(6). On appeal, Energizer challenges the decision of the Commission in

Energizer III with respect to both validity and infringement. Since I would resolve the appeal on the basis of validity, I do not reach the issue of infringement.

I.

Recognizing that in Energizer III the Commission applied what it viewed as "the claim construction mandated by the Federal Circuit," id. at 13, Energizer takes the position that, in Energizer II, this court did not construe the term "said zinc anode." Starting from this premise, it argues that, "since the prior panel did not directly consider the construction of 'said zinc anode,' only that the lack of an explicit antecedent basis did not render the claim indefinite, the construction of 'said zinc anode' is not covered by the law-of-the-case doctrine." Energizer Reply Br. 16–17.

From there, Energizer argues that the Commission erred in ruling that the asserted claims of the '709 patent are invalid for failure to meet the written description requirement of 35 U.S.C. § 112, ¶ 1. In making this argument, it contends that the Commission's written description analysis is flawed because it is based upon an incorrect claim construction. According to Energizer, "[w]hen the entirety of the claim language, the specification, and other evidence of record is considered, it is the 'zinc'—i.e., the 'active anode component'—which must possess the characteristics necessary to comply with the post-

partial discharge requirements of claim 1." Energizer Br. 24. In other words, Energizer argues that, when properly construed, claim 1 "requires that the zinc powder utilized to make the anode gel, not the anode gel itself, possess the expansion properties required by the claims." Id. at 37. When construed this way, Energizer states, claim 1 and its dependent claims are not invalid for failure to meet the written description requirement. That is because "[t]here is no doubt that the written description of the specification makes it clear that it is the anode mix of the test cell, not the anode gel of the claimed electrochemical cell, that is to be discharged in accordance with the limitation of claim 1—i.e., 'for 161 minutes to a 15% depth of discharge at 2.88A.'" Id. at 28.

The prior panel in Energizer II did construe the term "said zinc anode." The pertinent part of the opinion is quoted above. For present purposes what is most important are the first two sentences of the quoted material: "Here, it is apparent that the claim can be construed. In that regard, we conclude that 'anode gel' is by implication the antecedent basis for 'said zinc anode.'" Energizer II, 435 F.3d at 1371. This language constitutes a clear statement of claim construction.

As noted above, the issue of whether a claim meets the definiteness requirement of section 112, ¶ 2 turns on a determination as to whether the claim can be construed. Thus, the Energizer II panel appropriately went beyond merely holding

that "said zinc anode" was not indefinite for lack of an antecedent basis. Rather, the panel stated that "said zinc anode" possessed an antecedent basis, which antecedent basis was "anode gel." Id.; see Aero Prods. Int'l, Inc. v. Intex Recreation Corp., 466 F.3d 1000, 1016 (Fed. Cir. 2006) (determining that a claim can be construed and subsequently dictating the proper construction); Howmedica Osteonics Corp. v. Tranquil Prospects, Ltd., 401 F.3d 1367, 1371 (Fed. Cir. 2005) (same).

Whenever a panel of an appellate court definitively decides an issue, the issue cannot be reconsidered by a lower court on rehearing the case or by a second panel of the appellate court. See Gould, Inc. v. United States, 67 F.3d 925, 930 (Fed. Cir. 1995) (stating that the rule established by a prior panel must apply in decisions of lower courts and later panels absent the emergence of new evidence, intervening change of law, or clear error in the previous opinion working manifest injustice); Gindes v. United States, 740 F.2d 947, 949 (Fed. Cir. 1984) (noting that the rule adopted in an appeal must be applied by any lower court and a later panel of the appeals court, whether correct or not, absent exceptional circumstances). Thus, as far as claim 1 of the '709 patent is concerned, as a matter of claim construction, "said zinc anode" denotes "anode gel."

Once it is established that, in claim 1, the term "said zinc anode" denotes "anode gel," it becomes clear that Energizer's claim construction argument

must be rejected. The reason is that, when boiled down to its essentials, the argument represents a backdoor attempt to overturn the construction that the court set forth in Energizer II. Energizer argues that, in claim 1, "said zinc anode" denotes the zinc used to manufacture the "anode gel" in the battery cell. The problem with that argument is that it squarely contradicts what the court said in Energizer II: "Here it is apparent that the claim can be construed. In that regard, we conclude that 'anode gel' is by implication the antecedent basis for 'said zinc anode.'" 435 F.3d at 1371. Once it is determined that "said zinc anode" denotes "anode gel," it means that, as the Commission held, it is the "anode gel" of the battery cell sold to consumers—not the zinc of the test cell—that is tested in accordance with the parameters of the claim.

As I will discuss in more detail below, a fundamental disconnect exists between the claims and specification of the '709 patent. The specification speaks consistently of a test cell, describing its properties and usage, whereas the claims speak exclusively of the anode of a completed battery. I recognize that claims are to be read in light of the specification, of which they are a part. Phillips v. AWH Corp., 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc). At the same time, however, "[i]t is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" Id. at 1312 (quoting Innova/Pure Water, Inc. v.

Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1115 (Fed. Cir. 2004)). "The written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of the claims." Markman v. Westview Instruments, Inc., 52 F.3d 967, 980 (Fed. Cir. 1995) (en banc), aff'd 517 U.S. 370 (1996). A court cannot remedy for Energizer the gulf that it has created between the claims and the specification by speaking solely of a test cell in the specification while claiming a completed battery in the claims.

Energizer's argument that construing "said zinc anode" of claim 1 to denote "anode gel" leads to an illogical result is unavailing. This court addressed a similar contention in Chef America, Inc. v. Lamb-Weston, Inc., 358 F.3d 1371 (Fed. Cir. 2004). In that case, the claim at issue related to a dough-producing process. By its terms, one of the claim limitations called for "'heating the . . . dough to a temperature in the range of about 400° F. to 850° F. for a period of time ranging from about 10 seconds to 5 minutes . . . .'" Id. at 1374. The problem with this limitation was that it was undisputed that, if the dough was heated to the specified temperature range, "it would be burned to a crisp." Id. at 1373. Nevertheless, noting that "the claim unambiguously requires that the dough be heated to a temperature range of 400° F. to 850° F.," the court rejected the patentees' argument that it should construe the word "to" in the claim to mean "at" because otherwise the patented process could not perform the function the patentees intended.

Id. at 1374–75. Referring to cases cited earlier in the opinion, the court stated: "As we have noted . . ., we have repeatedly declined to rewrite unambiguous claim language for that reason." Id. at 1375.

Claim 1 of the '709 patent unambiguously requires that the anode gel of a battery sold to consumers undergo the discharge test set forth in the specification. The claim requires that "said zinc anode [i.e. the anode gel of the battery sold to consumers] ha[ve] a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A." However, as noted above, no commercial battery could be subjected to such a test. Thus, as did the claim in Chef America, claim 1 unambiguously requires an illogical result. The inventor easily could have avoided this problem by drafting claim 1 so that it read "said zinc anode is comprised of zinc that has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A." The inventor did not use such language, however. Instead, he wrote a claim that unambiguously calls for subjecting the anode gel of a completed battery to the discharge test, and this court cannot rewrite the claim. I turn now to the issue of validity.

Appendix A

II.

Patents are presumed valid, and the party challenging a patent as invalid must present clear and convincing evidence of invalidity. 35 U.S.C. § 282 (2000); Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings, 370 F.3d 1354, 1365 (Fed. Cir. 2004). Thus, before the Commission, Intervenors were required to show by clear and convincing evidence that the '709 patent did not comply with the written description requirement of 35 U.S.C. § 112, ¶ 1.

A validly issued patent must comply with the written description requirement. As noted above, 35 U.S.C. § 112, ¶ 1 provides that "[t]he specification shall contain a written description of the invention." In University of Rochester v. G.D. Searle & Co., 358 F.3d 916 (Fed. Cir. 2004), this court stated that the written description requirement involves "determining whether the subject matter defined in the claims is described in the specification," id. at 921; see also TurboCare Div. of Demag Delaval Turbomachinery Corp. v. Gen. Elec. Co., 264 F.3d 1111, 1119 (Fed. Cir. 2001) (holding that "[n]o reasonable juror could find that [the appellant's] original disclosure was sufficiently detailed to enable one of skill in the art to recognize that [the appellant] invented what is claimed"). In other words, the specification must describe the subject matter of the invention that is later claimed to be protected in the claims. Univ. of Rochester, 358 F.3d at 927.

Appendix A

The determination of whether a patent meets the written description requirement is a question of fact. Falko-Gunter Falkner v. Inglis, 448 F.3d 1357, 1363 (Fed. Cir. 2006). In an appeal of a final decision of the Commission under 19 U.S.C. § 1337, this court reviews the Commission's findings of fact to determine whether they are supported by "substantial evidence." See Jazz Photo Corp. v. Int'l Trade Comm'n, 264 F.3d 1094, 1099 (Fed. Cir. 2001); Tandon Corp. v. Int'l Trade Comm'n, 831 F.2d 1017, 1019 (Fed. Cir. 1987). Substantial evidence is "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." Oak Tech., Inc. v. Int'l Trade Comm'n, 248 F.3d 1316, 1325 (Fed. Cir. 2001) (quoting Consol. Edison Co. v. Nat'l Labor Relations Bd., 305 U.S. 197, 217 (1938)).

Claim 1 of the '709 patent claims "[a]n electrochemical cell comprising . . . an anode gel comprised of zinc as the active anode component, wherein . . . said zinc anode has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A." '709 patent col.10 ll.57–64. As seen, the Commission found a major disconnect between the language of the claims and the specification.

The claimed "electrochemical cell" is a battery cell to be sold to consumers. As discussed above, what this means is that, by its plain terms, claim 1 of the '709 patent claims a battery cell to be sold to consumers in which the anode gel (or the anode) of

the cell "has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A." Id. col.10 ll.62–64. That, however, is not what is disclosed in the specification. Indeed, Energizer recognizes this, for on appeal it states that "[t]here is no doubt in this case that the written description of the specification makes clear that it is the anode mix of the test cell, not the anode gel of the claimed electrochemical cell, that is to be discharged in accordance with the limitation of claim 1." Energizer Br. 28.

The specification sets forth a detailed test procedure. See '709 patent col.4 l.38–col.5 l.44. The specification states that the procedure is run by preparing a 100-gram "anode mix" using 63 grams of zinc powder. Id. col.4 ll.38–52. Referring to FIG. 1 of the patent, the specification recites that "an anode collector 10 in the form of a disk with a tap 12 is made from 33 ga cartridge brass sheet placed inside a flat bottomed 500 ml polypropylene beaker that is cut off at about the 250 ml level, thus providing a cell cup 1." Id. col.4 ll.45–49. The anode mix is then placed in the "cell cup": "One hundred grams of the anode mix 15 is added into the cup 1 on top of the anode current collector 10." Id. col.4 ll.50–52. Still referring to FIG. 1, the specification continues by stating that "[a] strip of separator paper 19 is placed on the wall of the cup 1 to shield the anode collector tab 12 from the cathode collector 20." Id. col.4 ll.54–56. The specification explains that "[t]he cathode collector 20 is a piece of 0.011 inch thick Type 'K' zinc sheet,

and is cut in a 3 inch disk 22 with a 0.5 inch by 1.5 inch tab 23. The disk 22 contains openings 25 that permit escape of hydrogen gas during discharge." Id. col.4 ll.56–60. Next, referring to FIG. 2 of the patent, the specification describes in detail the procedure for "identifying zinc for cells" of the invention claimed in the patent. Id. col.5 ll.1–48. The specification continues with a description of the kinds of additives that are appropriate for the cells of the invention, id. col.5 l.52–col.6 l.51, and with a discussion of the anode current collector 10, id. col.6 l.52–col.7 l.31. This discussion specifies that "[a] burnished brass anode collector is preferably employed in the cells of this invention." Id. col.6 ll.52–53. Before the claims of the patent, the specification gives two examples of cells that can be used in the described procedure. Id. col.8 l.62–col.10 l.55. The first sentence of Example 1 states that "[s]everal C-size cells are constructed, discharged and stored at different temperatures for different periods." Id. col.8 ll.62–63. For its part, the first sentence of Example 2 states that "[c]ells are prepared in the same manner with the same components as in Example 1, except that no indium hydroxide is added." Id. col.10 ll.16–18.

I have described the specification of the '709 patent at some length to demonstrate why it is clear to me that what is claimed in claim 1 of the '709 patent is not what is described in the patent specification. Claim 1 claims a commercial battery cell in which the anode gel (anode) is "discharged for 161 minutes to 15% depth of discharge at

2.88A," whereas, as Energizer recognizes, the specification describes only a test cell—which is not referenced in the claims—being discharged to that parameter. The specification consistently uses the term "anode gel" to refer to the anode of a test cell, not to the anode of a completed battery. See id. col.4 l.39 (describing the process of subjecting an anode gel of a test cell to the discharge test), col.8 l.60–col.10 l.15 (providing examples of test cells). Finally, the specification contains no language linking the anode gel of a completed battery, as described in the claims, with the test cell described in the specification.

In a word, at the root of the written description issue in this case lies the fact that the invention of the '709 patent is a test to pre-screen zincs for use in zero-mercury added alkaline batteries to be sold to consumers.[4] As just seen, that is the invention that is described in the patent specification. However, the claims of the '709 patent were drafted to claim commercial alkaline batteries. "Specifications teach. Claims claim." SRI Int'l v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1121 n.14 (Fed. Cir. 1985). The problem in this case is that the specification of the '709 patent does not teach what is claimed, whereas the claims of the patent do not claim what is taught. For that reason, the decision of the Commission that the

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[4] Dr. Scarr, an inventor of the subject matter of the '709 patent, testified that "[his] invention was a way of qualifying zinc powder [f]or use in batteries that were to be used in the zero-mercury applications." Scarr Dep. 18.

asserted claims of the '709 patent are invalid for failure to meet the written description requirement of 35 U.S.C. § 112, ¶ 1 is neither unsupported by substantial evidence nor tainted by legal error.[5] See Univ. of Rochester, 358 F.3d at 921 (stating that deciding whether the written description requirement is met involves "determining whether the subject matter defined in the claims is described in the specification").

CONCLUSION

For the foregoing reasons, I would affirm the decision of the Commission in Energizer III to terminate its investigation into Intervenors' importation into the United States of zero-mercury-added alkaline batteries.

AFFIRMED

[5] Since I conclude that claims 1–7 of the '709 patent are invalid for failure to meet the written description requirement, I do not reach the issue of infringement.

Appendix A

NOTE: This disposition is nonprecedential.

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

2007-1197

ENERGIZER HOLDINGS, INC.
and EVEREADY BATTERY COMPANY, INC.,

Appellants,

v.

INTERNATIONAL TRADE COMMISSION,

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GOLDEN POWER INDUSTRIES, LTD., GUANGDONG CHAOAN ZHENGLONG ENTERPRISE CO., LTD., GUANGZHOU TIGER HEAD BATTERY GROUP CO., LTD., FUJIAN NANPING NAFU BATTERY CO., LTD., HI-WATT BATTERY INDUSTRY CO., LTD., NINGBO BAOWANG BATTERY CO., LTD., SICHUAN CHANGHONG ELECTRIC CO., LTD., and ZHONGYIN (NINGBO) BATTERY CO., LTD.,

Intervenors.

Appendix A

On appeal from the United States International Trade Commission in Investigation No. 337-TA-493.

LINN, Circuit Judge, concurring in the result set forth in the opinion filed by Judge Schall.[1]

While I concur with my colleague, Judge Schall, that claim 1 of the '709 patent is invalid, I reach that conclusion for a different reason. Judge Schall agrees with the International Trade Commission's ("Commission's") holding of invalidity based on lack of written description under 35 U.S.C. § 112, ¶ 1. He does so by applying our precedent, which finds in paragraph one of section 112 a separate written description requirement. I have long been critical of that precedent and believe that § 112, ¶ 1 requires no more than an enabling disclosure of the claimed invention. See Univ. of Rochester v. G.D. Searle & Co., Inc., 375 F.3d 1303, 1325–27 (Fed. Cir. 2004) (Linn, J., dissenting from denial of rehearing en banc); Enzo Biochem, Inc. v. Gen-

[1] In Eastern Enterprises v. Apfel, 524 U.S. 498 (1998), five justices of the Supreme Court agreed to invalidate portions of the Coal Act, but disagreed as to the basis for the judgment. Justice O'Connor filed an opinion, joined by three of her colleagues, reasoning that the Coal Act violated the Takings Clause of the Fifth Amendment. E. Enter., 524 U.S. at 538. Justice Kennedy filed an opinion concurring in the judgment but noting that he would invalidate the Coal Act "without regard to the Takings Clause." Id. at 539. Thus, while a majority supported the result set forth in the Judgment, there was no "opinion of the Court." See id. at 503. The same is true in the present case.

Probe Inc., 323 F.3d 956, 987–89 (Fed. Cir. 2002) (Linn, J., dissenting from denial of rehearing en banc). But I see no need here to revisit that debate because, as I see it, the present case can be—and properly should be—decided on the basis of the patentee's failure to comply with § 112, ¶ 2.

Paragraph two of section 112 states that "[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." I agree with the determination made on the last appeal that the claim is not indefinite for failure to provide antecedent basis for the phrase "said zinc anode."[2] Following that determination, the Commission on remand was required to decide, inter alia, the scope of the claim and the "subject matter" which the applicant "particularly point[ed] out and distinctly claim[ed] . . . as his invention." § 112, ¶ 2. And therein lies the problem. A proper construction of the disputed claim is unattainable.

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[2] In the last appeal, the court was presented with the narrow question of whether the claim term "said zinc anode" lacked antecedent basis. I do not read our determination that "anode gel" is the antecedent basis for "said zinc anode" as foreclosing any further consideration of § 112, ¶ 2 issues. And even to the extent that opinion could be read more broadly, the law of the case doctrine "merely expresses the practice of courts generally to refuse to reopen what has been decided, not a limit to their power." Messinger v. Anderson, 225 U.S. 436, 444 (1912); see also Cent. Soya Co. v. Geo. A. Hormel & Co., 723 F.2d 1573, 1580 (Fed. Cir. 1983) (noting that the law of the case doctrine "is not an inexorable command").

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The claim cannot be interpreted to mean a battery cell with an anode gel having 63 grams of zinc, not only because such a construction is inconsistent with present commercial requirements, but more significantly because that would require an anode gel which expands in accordance with the specifications of the test cell configuration and yet acts in concert with a cathode of the type specified in the commercial battery examples. Such an interpretation can hardly be said to reflect what the applicant regarded as his invention. On the other hand, to construe the claim to cover what the applicant seems to have intended—namely, a battery cell with an anode containing zinc of a purity determined by use of the disclosed test cell procedure—would require that we rewrite the claim. That we are not permitted to do. See Allen Eng'g Corp. v. Bartell Indus., Inc., 299 F.3d 1336, 1349 (Fed. Cir. 2002) ("It is not our function to rewrite claims to preserve their validity."); Rhine v. Casio, Inc., 183 F.3d 1342, 1345 (Fed. Cir. 1999) (noting that we have "admonished against judicial rewriting of claims to preserve validity"). We are simply tasked with determining whether the claims "particularly point[ ] out and distinctly claim[ ]" what the inventor regards as his invention. 35 U.S.C. § 112, ¶ 2 ; see also In re Zletz, 893 F.2d 319, 322 (Fed. Cir. 1989) (holding that claims failing this test during prosecution must be rejected under § 112, ¶ 2). If the applicant desired coverage of a battery with zinc having specified properties, it should have written claim 1 of the '709 patent the way it wrote claim 1 of its

related U.S. Patent No. 5,395,714 (reciting, "[a]n electrochemical cell comprising . . . an anode gel comprised of low expansion zinc which has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A"). See Hoganas AB v. Dresser Indus., Inc., 9 F.3d 948, 951 (Fed. Cir. 1993) ("If [the patentee], who was responsible for drafting and prosecuting the patent, intended something different, it could have prevented this result through clearer drafting.").

Because I believe the claim is insolubly ambiguous and, thus, indefinite, I concur that claim 1 of the '709 patent is invalid. See Exxon Research & Eng'g Co. v. United States, 265 F.3d 1371, 1375 (Fed. Cir. 2001) ("If a claim is insolubly ambiguous, and no narrowing construction can properly be adopted, we have held the claim indefinite."). In my opinion, claim 1 fails to comply with the second paragraph—not the first paragraph—of § 112.

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NOTE: This disposition is nonprecedential.

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

2007-1197

ENERGIZER HOLDINGS, INC.
and EVEREADY BATTERY COMPANY, INC.,

Appellants,

v.

INTERNATIONAL TRADE COMMISSION,

Appellee.

and

GOLDEN POWER INDUSTRIES, LTD., GUANGDONG CHAOAN ZHENGLONG ENTERPRISE CO., LTD., GUANGZHOU TIGER HEAD BATTERY GROUP CO., LTD., FUJIAN NANPING NAFU BATTERY CO., LTD., HI-WATT BATTERY INDUSTRY CO., LTD., NINGBO BAOWANG BATTERY CO., LTD., SICHUAN CHANGHONG ELECTRIC CO., LTD., and ZHONGYIN (NINGBO) BATTERY CO., LTD.,

Intervenors.

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Appeal from the United States International Trade Commission in Investigation No. 337-TA-493.

NEWMAN, Circuit Judge, dissenting from the judgment.

My colleagues on this panel hold the Energizer patent invalid, although they do not agree on the grounds, and there is no majority opinion. I write separately to state my concerns with their respective theories. Although it is apparent that the '709 patent's claims are not perfect, it is equally apparent that the invention that is claimed is the invention that is unambiguously and clearly described in the specification. When there is absolute clarity in the specification, the court fails its responsibility as ministrator of justice, by wiping out a valuable patent on imperfections that confuse no one. The complexities of patent claim writing are notorious. There are few, if any, legal documents more difficult to craft, more fraught with pitfalls than patent applications; and patent claims are so universally challenging to the non-specialist, that this court has converted the judicial need to understand them into an unruly cottage industry called "claim construction." Yet the Energizer patent claims are readily and unambiguously understood when the rest of the specification is read.

Thus I do not agree that the '709 patent does not meet the written description or definiteness requirements. My colleagues reach these

conclusions after construing the claims to exclude the invention described in the specification, and on this basis they hold the description in the specification or the wording of the claims defective. Undoubtedly the claims could have been more perfectly drawn, but when read in the context of the specification there is no doubt as to what is described and claimed. See, e.g., Biogen, Inc. v. Berlex Labs., Inc., 318 F.3d 1132, 1140 (Fed. Cir. 2003) ("Any ambiguity, as may be raised when dispute arises, requires the decisionmaker to focus objectively on the patent specification and claims, for the specification is the basic presentation by the applicant, and the claims represent the final product of a sometimes imperfect process."); Multiform Dessicants, Inc. v. Medzam, Ltd., 133 F.3d 1473, 1477 (Fed. Cir. 1998) ("It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed."). All parties, including the Intervenors, agree that a person of ordinary skill in the field of the invention would understand what was invented, described, and claimed, despite less than perfect clarity if the claims are removed from their foundation in the specification.

The entire specification is directed to the testing of the zinc anode material for gel expansion under standardized conditions, using 63 grams of zinc in 100 grams of test anode material and measuring the gel expansion when the test anode is discharged for 161 minutes to 15% depth of discharge at 2.88A — these are the parameters

included in the claims to characterize the "low expansion" zinc in the claimed electrochemical cells. Included in the patent are drawings of the apparatus in which the sample gel is discharged. The specification unambiguously describes the low expansion zinc anode gels and measurement of their degree of expansion:

> The term "low expansion" is a relative term, and is determined by comparing the amount of expansion of different types of zinc anode gel mixes. Generally, the zinc used to prepare the anode gel that expands the least will provide a lower gassing cell, and, thus, in this invention, "low expansion zinc" means zinc that expands to a lower degree relative to other zincs. The degree of expansion of zinc anode gels can be measured by preparing an anode gel, assembling a cell and discharging the cell. An amount of the gel is then removed from the cell, place in a container and stored. After storing, the amount of expansion is measured and compared to the amount of expansion of undischarged gel that is stored under the same conditions.

'709 patent, col. 4, lines 25-37. Nonetheless, my colleagues on this panel ignore the specification's lengthy exposition of the measurement of the degree of expansion of "different types of zinc anode gel mixes," supra, when discharged under standardized conditions.

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The specification teaches that zinc anode gels with low expansion are preferable for use in commercially useful alkaline batteries; it is such battery cells that comprise the claimed subject matter. The "Background of the Invention" explains that the problem of gas formation due to corrosion of the zinc, resulting in gel expansion and leakage, had previously been controlled by including mercury in the anode, but that adverse environmental effects require elimination of the mercury component. Id. col. 1, lines 23-59. The "Summary of the Invention" states: "The cell comprises an alkaline electrolyte, a cathode and an anode arranged in a sealed container in a manner effective to provide electrochemical energy, wherein the anode is comprised of low expansion zinc as the active anode material," id. col. 2, lines 24-28, and that "[t]he cells do not leak under conditions of normal use and storage, and provide an effective amount of electrochemical energy to be useful as batteries," id. col. 2, lines 36-40.

The "Detailed Description of This Invention" states that zinc is the active anode material, and that "[p]referably, the zinc is low expansion zinc, and is in powder form," and that when combined with a binder, an electrolyte solution, and other optional components to form an anode gel, the gel typically "expands when it is discharged and then stored." Id. col. 4, lines 12-17. The specification then provides a detailed description of a standardized method of determining the expansion of a given anode gel, and the characteristics, using

that method, of the desired low expansion zinc, stating the procedure that is used to test batches of zinc powder for use in "the cells of this invention." Id., col. 4, lines 38-39. The specification contains a full "written description" of this measurement procedure, including specific examples of an "anode mix . . . made of 63 weight percent zinc powder, 0.5 weight percent binder (Carbopol™940 is a suitable example), and 36.5 weight percent of aqueous potassium hydroxide electrolyte (37% aqueous solution) that contains 42.5 gm of zinc oxide per liter." Id. col. 4, lines 40-44. In conducting the measurement, 100 grams of this mixture is placed a test cell, shown in patent drawing Figure 1, and discharged, shown in patent drawing Figure 2, "to 15% depth of discharge at 2.88A for 161 minutes." Id. col. 4, line 45 through col. 5, line 3. The test applies external amperage for discharge, and after 161 minutes of discharge the gel expansion is determined:

> After the discharge is completed, a portion of the anodc mix is measured to the six millimeter level into four polypropylene graduated cylinders that have a capacity of ten millimeters. The cylinders should contain about 17 grams of anode mix. The same amount of fresh undischarged anode mix should be measured into four other ten millimeter graduated cylinders. About 1 millimeter of low density, high vapor pressure oil, such as pump oil, that is insoluble in and inert to the electrolyte is

> added on top of the mix in each cylinder. . . . [After storage for 24 hours at 71°C] the specific expansion rate of the mix (SER) is calculated . . . .

'709 Patent, col. 5, lines 12-40. The testing procedure requires not only the discharge of a test anode gel in a test cell, but also storage and comparative measurement of the discharged anode mix.

The specification also describes alkaline batteries prepared using the zinc that meets the test criteria, explaining that some "void volume" is left in an alkaline cell to accommodate whatever amounts of gas may be formed, and that "the cells of this invention have a void volume of 6% to 13% of the cell's internal volume." Id. col. 7, lines 32-36. The specification states, "The cells of this invention, regardless of size, exhibit a degree of bulge less than the amount that will typically cause leakage of the cell components," id. col. 8, lines 33-35, and presents specific test results for C-size cells using zinc that was determined to have a "6.2% SRVER [i.e. relative volume] expansion rate" using the designated measurement procedures, id. col. 8, line 54 through col. 10, line 55. It is clear throughout the specification that the gel expansion rate is determined in advance, in accordance with the specified test cell measurement procedure.

Claim 1 of the '709 patent is as follows:

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> 1. An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode component, and an anode gel comprised of zinc as the active anode component, wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell and said zinc anode has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.

The Commission ruled (by majority vote) that claim 1 requires that every electrochemical cell covered by the claim has been discharged for 161 minutes to 15% depth of discharge at 2.88A. The Commission held that the cell discharge parameters set forth in the claim are not applied to a test cell, but require that every cell covered by the claim has been discharged for 161 minutes to 15% depth of discharge at 2.88A. The Commission observed that this "invention" is not described in the specification, which describes the discharge of a test cell, and thus the Commission held the claim invalid for lack of written description of what is claimed. My colleague Judge Schall agrees with the Commission, whereas my colleague Judge Linn views the claims as fatally indefinite because they do not claim what is described. Indeed, the claim does not explicitly refer to the test cell. However, it is not difficult to read the claims in accordance with the specification. It is the judicial obligation to preserve property rights when this can reasonably

be accomplished, when there is no doubt as to what is patented. All of the parties, including the Intervenors, conceded that they readily understood what had been invented and what is intended to be covered by the claims.

The Commission attributed its holding to this court's ruling on a previous appeal, Energizer Holdings, Inc. v. United States International Trade Commission, 435 F.3d 1366 (Fed. Cir. 2006), where this court reversed the Commission's holding that the claims were invalid for indefiniteness due to the lack of "antecedent basis" for the claim term "said zinc anode." This court held that the claim was not indefinite, explaining that the earlier mention of "anode gel" was an adequate antecedent basis. The court pointed out that the claim-drafting protocol of "antecedent basis" is a technical procedure, that the patent examiner had not objected on this ground, and that no party had argued that the claim was unclear because of the lack of an antecedent basis. Id. at 1370-71.

On remand, the Commission held that this court's "antecedent basis" designation requires that every claimed cell is discharged for 161 minutes to 15% depth of discharge at 2.88A. The Commission explained that since the specification discusses these parameters only for a test cell, while the claim requires that the anode of every complete electrochemical cell is discharged, the specification's written description is deficient and therefore the claim is invalid on written description

grounds. The two Commissioners in dissent stated that they "understand the disputed language of claim 1 to indicate that the anode gel exhibits a certain property ('has a gel expansion of less than 25%') when subjected to specific parameters ('discharged for 161 minutes to 15% depth of discharge at 2.88A'')," and that looking at the specification, a person of ordinary skill would understand that the claim describes a "gel expansion" property, which is evaluated by means of the test cell "according to the parameters more fully described in the specification." Comm'n diss. op. at 2-3. The dissenters concluded that this court's designation of an antecedent for "said zinc anode" did not "mandate" the majority's reading of the claim as requiring that every cell is discharged.

My colleagues agree with the Commission majority that the claim language requires discharge of the anode of every claimed cell, rather than a test cell, one colleague then holding that the claims are invalid because the specification does not accord with the claims, and the other colleague holding that the claims are invalid because the claims do not accord with the specification. I repeat, no one is confused as to the invention in the specification, and the parties and intervenors so confirmed. Yet this court simply declines to read the claims in light of the specification.

One can criticize the claims for permitting the absurd reading that was accepted by the Commission and now by my colleagues. However,

when the specification is consulted, there is no ambiguity as to what is covered by the claim. "The claims of a patent are always to be read or interpreted in light of its specifications . . . ." Schriber-Schroth Co. v. Cleveland Trust Co., 311 U.S. 211, 217 (1940); Carnegie Steel Co. v. Cambria Iron Co., 185 U.S. 403, 432 (1902) ("The claim of a patent must always be explained by and read in connection with the specification . . . ."); Phillips v. AWH Corp., 415 F.3d 1303, 1315 (Fed. Cir. 2005) (*en banc*) ("claims must be read in view of the specification, of which they are a part").

When there is an apparent ambiguity in claim language, the court must seek a reasonable interpretation based on the specification, not one that defies the fundamental tenets of the invention. See Rexnord Corp. v. Laitrop Corp., 274 F.3d 1336, 1343 (Fed. Cir. 2001) ("[I]f the term or terms chosen by the patentee so deprive the claim of clarity that there is no means by which the scope of the claim may be ascertained by one of ordinary skill in the art from the language used, a court must look to the specification and file history to define the ambiguous term in the first instance."); K-2 Corp. v. Salomon S.A., 191 F.3d 1356, 1363 (Fed. Cir. 1999) (same). "[I]t is necessary to consider the specification as a whole, and to read all portions of the written description, if possible, in a manner that renders the claim internally consistent," Budde v. Harley-Davidson, Inc., 250 F.3d 1369, 1379-80 (Fed. Cir. 2001), as well as to reflect the purpose of the invention, Apple

Computer, Inc. v. Articulate Systems, Inc., 234 F.3d 14, 25 (Fed. Cir. 2000). As the court recognized in Autogiro Co. v. United States, 384 F.2d 391 (Ct. Cl. 1967), the determination of whether a claim is ambiguous or clear cannot be ascertained without reference to the specification and prosecution documents:

> Claims cannot be clear and unambiguous on their face. A comparison must exist. The lucidity of a claim is determined in light of what ideas it is trying to convey. Only by knowing the idea, can one decide how much shadow encumbers the reality. . . .
>
> ****
>
> . . . Thus we find that a claim cannot be interpreted without going beyond the claim itself. No matter how clear a claim appears to be, lurking in the background are documents that may completely disrupt initial views on its meaning.
>
> ****
>
> In deriving the meaning of a claim, we inspect all useful documents and reach what Justice Holmes called the "felt meaning" of the claim.

Id. at 396-97 (footnotes omitted). Precedent is extensive, and powerful, that any uncertainty flowing from the drafting of the claim seeks resolution by recourse to the specification, as understood by persons of ordinary skill in the field of the invention. See Carnegie Steel, 185 U.S. at

437 ("The specification of the patent is not addressed to lawyers, or even to the public generally, but to the manufacturers of steel . . . .").

Where, as here, it was agreed that a person of ordinary skill in the field of the invention would understand that the specification describes and the claims state the parameters of the test for gel expansion, and do not require every battery cell to be discharged before it is sold, the proper claim construction must reflect that undisputed understanding. There is no warrant for the Commission and my colleagues to adopt an unsupportable view of the claims, and then invalidate the claims because that view is not supported.

The specification shows that the discharge time and conditions and gel expansion parameters are for the test cell. No lack of clarity in the specification has been suggested. The specification's description of 63 grams of zinc in a 100-gram test anode gel, the 161 minute discharge to 15% depth, the application of an external current of 2.88A, and the incubation of the discharged mix along with control samples in graduated cylinders for 24 hours at 71°C, cannot be understood as required for every claimed electrochemical cell that is manufactured for sale in commerce. The patent examiner did not require clarification, and all parties agreed that the parameters in the claim apply to the test cell. The Commission so stated:

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> The specification consistently refers to the anode gel in its entirety as being the anode of the cell. The so-called "low expansion" zinc used in the anode gel is selected from available zinc powders by using a test to measure what the specification refers to as the "specific expansion rate" ("SER") and/or "relative volume expansion rate" ("SRVER") of a test anode gel mix made from 63 grams of the zinc powder being screened. The test employs a special electrochemical test cell and apparatus described in the specification. Zinc powders used in test anode gel mixes that pass the test, referred to as "low expansion" zincs, may then be used with other components to make the anode gels of the alkaline cells.

Comm'n op. at 2-3 (footnote omitted). Nonetheless, the Commission held claim 1 fatally defective because it did not explicitly reference the test cell, ruling that "this test cell is not the 'electrochemical cell' of the claims nor is it referred to elsewhere in the claims." Id. at 16. The Commission stated that "[t]he specification does not associate the discharge language with the 'electrochemical cell' of the claims or with the anode gel (anode) of that cell," id. at 14, ruling that since the specification did not describe the Commissioner's incorrect claim construction the specification was totally defective on written description grounds.

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The question is whether Energizer's claims in the '709 patent should be construed in accordance with their undisputed intended meaning, as clearly described in the specification and accepted by the patent examiner, or whether this patentee must be punished for a "disconnect" or "ambiguity" that has no relation to what was invented. This court rejected a similar finding of invalidity in C.R. Bard, Inc. v. M3 Systems, Inc., 157 F.3d 1340, 1360 (Fed Cir. 1993), stating:

> Bard states that it is incorrect to construe the claims contrary to the specification, and then to hold the claims invalid because they are contrary to the specification. Bard is of course correct; the claims are construed in accordance with the rest of the specification of which they are a part, and not contrary to it.

This principle invokes the standard rules of claim construction, as in Hoechst Celanese Corp. v. B.P. Chemicals, Inc., 78 F.3d 1575, 1581 (Fed. Cir. 1996) ("it is unlikely that an inventor would define the invention in a way that excluded the preferred embodiment, or that persons of skill in the field would read the specification in such a way"). The appropriate analytic procedure is as set forth in Phillips, where the court reiterated that the primary source for understanding and thus construing a claim is the specification, and that "[t]he construction that . . . most naturally aligns with the patent's description of the invention will

be, in the end, the correct construction." 415 F.3d at 1315-16.

Contrary to Judge Schall's assertions, see Concurring in the Judgment op. (Schall, J.) at 2, nothing in this court's earlier ruling on "antecedent basis" forecloses an interpretation of the full claim language that comports with the invention described in the specification. The designation of "anode gel" as the implicit antecedent for "said zinc anode" does not affect the meaning of "has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A." This court has reiterated that "the patentee's mere use of a term with an antecedent does not require that both terms have the same meaning," Microprocessor Enhancement Corp. v. Texas Instruments Inc., ___ F.3d ___, 2008 WL 850332, at *7 (Fed. Cir. Apr. 1, 2008), especially when such construction would result in a "nonsensical reading" of the claim. Id. at *8 ("Indeed, the claims' apparent nonsensical reading under a uniform construction of "condition code" is indicative of the ease of determining the appropriate meaning of each use of the term from its context.").

Judge Linn does recognize that this court's earlier "antecedent basis" decision did not decide all remaining issues, see Concurring in the Judgment op. (Linn, J.) at 2 n.2, yet he concludes that the "nonsensical" construction adopted by Judge Schall and the Commission majority is the

only one that the claim language will bear without forbidden "rewriting." However, no rewriting of the claim is necessary to construe the claim's gel expansion criterion as determined by a test procedure, for the claimed parameters "for 161 minutes to 15% depth of discharge at 2.88A" are the test cell parameters described in the specification. Our role is not to criticize the claim language that was accepted by the examiner, as do my colleagues; our role is judicially to construe the claims as a person of skill in the field of the invention would understand them. Such construction is available in this case.

The Intervenors make much of what they call Energizer's "admitted claim drafting errors." However, it was conceded that the claims would be understood, by a person of ordinary skill, as stating test parameters, not as requiring that every battery is discharged. That is what the specification unambiguously describes. From my colleagues' holding of invalidity, on the ground of either written description or indefiniteness, I respectfully dissent.

APPENDIX B – COMMISSION OPINION OF THE UNITED STATES INTERNATIONAL TRADE COMMISSION ISSUED FEBRUARY 23, 2007

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
CERTAIN ZERO-MERCURY-ADDED ALKALINE BATTERIES, PARTS THEREOF, AND PRODUCTS CONTAINING SAME	)	**Inv. No. 337-TA-493 (Remand)**

COMMISSION OPINION

On February 23,2007, the Commission issued notice that it had terminated the above-captioned remanded investigation with a final determination of no violation of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) ("section 337") because the asserted claims of U.S. Patent No. 5,464,709 ("the '709 patent") are invalid for failure to meet the written description requirement and because, if valid, those claims are not infringed by the

respondents' products. This opinion sets out the reasons for the Commission's final determination.[1]

I. THE PRODUCTS AT ISSUE AND THE ASSERTED PATENT

A. The Products at Issue

The imported products at issue are zero-mercury-added alkaline batteries. Alkaline batteries are the familiar batteries used in consumer and other products and come in various sizes. They are referred to as alkaline batteries because they employ an alkaline electrolyte. The term "zero-mercury-added" generally means that no mercury has been added to the battery components prior to their assembly into a battery.

B. The '709 Patent

1. In General

This investigation involves one patent, the '709 patent, which is entitled "Alkaline Cells That Are Substantially Free Of Mercury." It issued on November 7, 1995, and is assigned on its face to Eveready Battery Company, Inc., of St. Louis, Missouri.

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[1] Vice Chairman Aranoff and Commissioner Lane dissent from the Commission's final determination. See Dissenting Views of Vice Chairman Aranoff and Commissioner Lane.

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As issued, the '709 patent contained 12 claims. During the course of the original investigation, the patentee disclaimed claims 8-12 and the complaint and notice of investigation were amended to terminate the investigation as to those claims. The claims in issue are therefore claims 1-7. Claim 1 is the only independent claim. It claims:

> An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode component, and an anode gel comprised of zinc as the active anode component, wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell and said zinc anode has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.

2. Summary of the Specification

The specification of the '709 patent purports to describe alkaline cells (or batteries) which are "substantially free of mercury" and which accomplish this end through the use of a multi-component anode gel which uses so-called "low expansion" zinc as the active anode component. The specification consistently refers to the anode gel in its entirety as being the anode of the cell. The so-called "low expansion" zinc used in the anode gel is selected from available zinc powders by using a test to measure what the specification refers to as the

"specific expansion rate" ("SER") and/or "relative volume expansion rate" ("SRVER")[2] of a test anode gel mix made from 63 grams of the zinc powder being screened. The test employs a special electrochemical test cell and apparatus described in the specification. Zinc powders used in test anode gel mixes that pass the test, referred to as "low expansion" zincs[3], may then be used with other components to make the anode gels of the alkaline cells.

As detailed in the Commission's opinion of October 15, 2004, it is clear that in the '709 patent specification and in both of the '709 patent examples, the anode of the alkaline cell is the anode gel and the zinc is described as a component (the active anode component) of that anode gel.[4]

It is also clear from the specification and both of the examples that the test for "low expansion" zincs discussed in the specification is a screening test used to select the zinc that is to be (or may be) incorporated into the anode gel of the alkaline cell.

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[2] The specification is not clear as to several aspects of these measurements as well as related calculations that depend on those measurements.

[3] There is no indication in the specification or suggestion by complainants that "low expansion" zincs are novel.

[4] *Certain Zero-Mercury-Added Alkaline Batteries, Parts Thereof, and Products Containing Same ("Batteries ")*, Inv. No. 337-TA-493 (Comm'n Op., October 15,2004). (Providing a detailed summary of the '709 patent specification, pp. 9-20, including the Commission's conclusions regarding the '709 patent specification, pp. 19-20.).

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The specification nowhere describes performance of the screening test after the construction of any completed consumer electrochemical cell; the screening test is performed only with the test cell, which constitutes part of the apparatus for performing that test. Indeed, the only test indicated in the specification that might be performed after construction of a complete alkaline cell is one for leakage. In the examples, the only tests performed on the completed cells were for bulging and leakage. CX-1, col. 9, 1.40-col. 10, l. 11 and col. 10, ll. 19-55. The composition of the anode gel of the test cell is specified and is not necessarily the same as the composition of the anode gel of the electrochemical cell, which may include additional or different non-zinc components which could affect the expansion of the anode gel.

In summary, the specification describes a screening test for zincs which are to be used as the active anode component of the anode gel (anode) of an electrochemical cell destined for consumers, including a test cell for performing that test. The specification also describes an electrochemical cell having an anode gel employing zinc which has previously been subject to that screening test and found suitable for use.

Appendix B

II. PROCEDURAL HISTORY

A. The Commission's Original Investigation

The Commission instituted this section 337 investigation on June 2, 2003, based on a complaint filed by Energizer Holdings, Inc. and Eveready Battery Company, Inc. (collectively, "EBC"). 68 *Fed. Reg.* 32771 (June 2, 2003). The complaint, as supplemented, alleged violations of section 337 of the Tariff Act of 1930 in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain zero-mercury-added alkaline batteries, parts thereof, and products containing same by reason of infringement of claims 1-12 of the '709 patent.[5] The investigation was assigned to administrative law judge ("ALJ") Charles E. Bullock.

The complaint and notice of investigation named twenty-six respondents: Atico International, U.S.A., Inc. ("Atico"); Sichuan Changhong Electric Company, Ltd. ("Sichuan Changhong"); Changhong Battery Company ("Changhong"); Chung Pak Battery Works ("Chung Pak"); Dorcy International, Inc. ("Dorcy"); FDK Corporation ("FDK"); FDK Energy Co., Ltd. ("FDK Energy"); Fujian Nanping Nanfu Battery Co., Ltd. ("Nanfu"); Golden Million Enterprises, Inc. ("GME"); Golden Power Industries, Ltd. ("Golden Power"); Gold Peak

[5] A copy of the '709 patent is attached to this opinion.

Industries, Ltd. ("GPI"); GP Industries Limited ("GP Industries"); GP Batteries International, Ltd. ("GP Batteries"); Gold Peak Industries (North America), Inc. ("GPNA"); Guangdong Chaoan Zhenglong Enterprise Co., Ltd. ("Zhenglong"); Guangzhou Tiger Head Battery Group Co., Ltd. ("Tiger Head"); Hi-Watt Battery Industry Company, Ltd. ("Hi-Watt"); Maxell Corporation of America ("MCA"); Monster Cable Products, Inc. ("Monster"); Ningbo Baowang Battery Co., Ltd. ("Ningbo Baowang"); PT International Chemical Industrial Co., Ltd. ("PT"); The Mazel Company d/b/a The Powerhouse Group ("Mazel"); Universal Battery Corporation ("Universal"); Winner International, LLC ("Winner"); Zhejiang 3-Turn Battery Co., Ltd. ("3-Turn"); and Zhongyin Ningbo Battery Co., Ltd. ("ZY Ningbo").

Subsequent to institution, the complaint and notice of investigation were amended to add an additional firm, Hitachi Maxell, Ltd., as a respondent. The investigation was terminated as to claims 8-12 of the '709 patent.

Thirteen respondents have been terminated from the investigation for various reasons. These respondents are: Changhong, GP Industries, FDK, FDK Energy, Monster, MCA, Hitachi Maxell, GME, GP Batteries, GPI, GPNA, Atico, and Dorcy. Thus, fourteen respondents remain in the investigation.

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On May 21, 2004, respondent Ningbo Baowang moved to terminate the investigation as to it pursuant to Commission Rule 210.21(a)(l). In a notice issued June 7, 2004, the ALJ referred the motion to the Chairman of the Commission, stating that since responses to the motion were due on June 2, 2004, the date the ALJ issued his final initial determination, it was inappropriate for him to rule on the motion by June 2, 2004, the date on which jurisdiction in the case passed from him to the Commission.

On June 2, 2004, the ALJ issued his final initial determination ("ID"),including his recommended determination on remedy and bonding. In his ID, the ALJ found all fourteen remaining respondents in violation of section 337. Specifically, he found that all fourteen remaining respondents infringed claims 1-7 (or in the case of respondent Winner, claims 1-4, 6, and 7) of the '709 patent and that a domestic industry exists with respect to complainants' batteries protected by the '709 patent. He rejected numerous arguments that the '709 patent is invalid and unenforceable. He recommended issuance of a general exclusion order with respect to infringing zero-mercury-added primary alkaline batteries and a limited exclusion order directed to respondent Winner with respect to infringing zero-mercury-added rechargeable alkaline batteries, but without coverage of downstream products. He also recommended issuance of cease and desist orders against respondents Mazel and Universal, and that the

amount of the bond during the Presidential review period be set at 100 percent of entered value.

On June 14, 2004, respondents Golden Power, Zhenglong, Tiger Head, Nanfu, Hi-Watt, Ningbo Baowang, Sichuan Changhong, 3-Turn, and ZY Ningbo (collectively, "the Golden Power respondents") jointly filed a petition for review of the ALJ's final ID. The respondents sought review of nearly all the conclusions of the final ID, including claim construction and invalidity for claim indefiniteness. Respondent PT also filed a petition for review of the ALJ's final ID, making its own independent arguments as well as incorporating the positions of the other respondents. Respondent Winner also filed a petition for review. Respondents Mazel and Universal filed a paper styled as a petition for review in which they incorporated by reference, and relied upon, the petitions for review of the other respondents. Respondent Ningbo Baowang filed a contingent petition for review of the ALJ's final ID (to be acted on in the event its pending motion to terminate was denied) and a motion to reopen the evidentiary record.

On June 21, 2004, complainants filed a general response to the petitions for review, as well as separate responses to the petitions for review of Winner and Ningbo Baowang. The Commission investigative attorney ("IA") filed a response to the petitions for review that same day.

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On August 19, 2004, the Commission issued notice that it had determined to review the final ID in its entirety, requesting briefing on the issues on review, as well as on remedy, the public interest and bonding.

B. The Commission's October 1, 2004, Final Determination

On October 1,2004, the Commission issued its final determination, finding no violation of section 337, concluding that asserted claims 1-7 of the '709 patent were invalid for indefiniteness. The Commission took no position on the other issues raised in the investigation and dismissed as moot the motion of respondent Ningbo to terminate the investigation as to it as well as Ningbo's motion to reopen the evidentiary record.

In concluding that the claims were indefinite, the Commission rejected EBC's construction of "said zinc anode" as "said zinc," since such a construction would have required reading "anode" out of "said zinc anode" and thus would have constituted an impermissible rewriting of the claims. The Commission also rejected respondents' proposed construction, stating:

> Respondents argue that "said zinc anode" means "anode gel." It is not clear that this construction is correct either, although it is supported by certain claim language and the specification (which equates "anode" with

> "anode gel"), since the claim would then require the anode gel of the "electrochemical cell" (the alkaline cell destined for consumers) be "discharged for 161 minutes to 15% depth of discharge at 2.88A," language that the specification associates only with the measurement or test cell, which is not referred to in the claim. Further, such discharge contemplates using 63 grams of zinc (the amount of zinc used in the zinc anode gel mix of the test cell) and there is no dispute that no commercial alkaline cell employs 63 grams of zinc in its anode gel.

Batteries, Comm'n Op. p. 25.

C. The Decision of the Court of Appeals for the Federal Circuit

EBC appealed the Commission's final determination to the Federal Circuit. On January 25, 2006, the Federal Circuit issued its decision in the appeal, reversing the Commission's final determination and remanding the investigation to the Commission for further proceedings. *Energizer Holdings, Inc. v. International Trade Commission*, 435 F.3d 1366 (Fed. Cir. 2006). However, in reversing the Commission's final determination, the Federal Circuit did not adopt the claim construction argued by EBC before the Commission or the Federal Circuit, but rather adopted the construction intervenors (respondents) had argued

before the Commission, *i.e.*, the Court stated that "said zinc anode" (the disputed claim term) referred to the term "anode gel," which appears earlier in the claims. The Federal Circuit's judgment issued as a mandate on March 20, 2006, and the case returned to the Commission.

D. The Commission's Proceedings on Remand

On April 14, 2006, the Commission issued an order directing all parties to the investigation to provide comments, in view of the Federal Circuit's reversal and remand of the Commission's final determination, on how each believed this investigation should proceed, including comments on whether and to what extent the investigation should be remanded to the ALJ. All parties who addressed the matter[6] are in agreement that no further briefing or remand is necessary and that the Commission should proceed to a final determination based solely on the present record.[7]

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[6] EBC, the Golden Power respondents, PT, Winner, and the IA filed responses to the Commission's order. Respondents Mazel and Universal filed a response relying on the submission of the Golden Power respondents. Respondent Chung Pak, after originally seeking an extension of time to file its comments, filed a paper relying on the submission of the Golden Power respondents. Ningbo Baowang filed an additional submission relating to its argument that it is licensed under the '709 patent.

[7] In its opening brief, respondent Winner sought to reopen the record in this investigation. However, in its reply, Winner stated its agreement with comments submitted by the IA and the Golden Power respondents, and requested such a reopening of the record only if the Commission does not

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III. STANDARD ON REMAND

The standard of review on remand is the same as for the Commission's determination on review of an ID, with one qualification. Both are governed by Commission rule 210.45(c) (19 C.F.R. § 210.45(c)). However, where the case has been remanded, under the mandate rule, the Commission is bound by the Federal Circuit's decision as to issues that were decided by the Court expressly or by necessary implication.[8] Thus on remand, within the

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terminate the investigation based on the current record. EBC requested that, in the absence of immediate affirmance of the ALJ's ID, the scope of the Commission's final determination on remand should "cover all issues of infringement and validity concerning the '709 patent" and that the Commission's decision should be based "upon the record and the ALJ's findings without going through the time-consuming process of a remand to the ALJ." EBC Brief ("EBC Br.") 6-7. However, EBC also stated that "[t]o the extent the Commission is of the opinion that there are additional issues of fact and/or law to be decided beyond the simple interpretation of the claim phrase at issue, Complainants request the opportunity for further briefing. Depending upon the nature and scope of those additional issues, Complainants reserve the right to request that the investigation be remanded to the ALJ." EBC Br. 7. We find that there are no such issues, *i.e.*, the case may be decided on the current record on the basis of the Federal Circuit's claim construction.

[8] The mandate rule is a specific application of the general doctrine of law of the case. *United States v. Matthews*, 312 F.3d 652, 657 (5th Cir. 2002), cert. denied, *Matthews v. United States*, 123 S.Ct. 1604 (2003). The law of the case doctrine states that an issue of fact or law decided on appeal may not be reexamined either by the district court on remand or by the appellate court on a subsequent appeal. *Tollett v. City of Kemah*, 285 F.3d 357, 363 (5th Cir. 2002), cert. denied, 537

limitations set by the mandate rule, the Commission conducts a limited *de novo* review and "examines for itself the record on the issues under review." *Certain Acid-Washed Denim Garments,* Inv. No. 337-TA-324 (USITC Pub. 2576 (Nov. 1992)). The Commission may affirm, reverse, or modify the ID in whole or in part. 19 C.F.R. § 210.45(c). It may also set aside or remand the ID in whole or in part. *Id.* In doing so, it may make any findings or conclusions that are in its view proper based on the record in the proceeding. *Id.*

IV. THE QUESTION OF VIOLATION

A. Application of the Mandate Rule

We reject EBC's contention that the Federal Circuit's opinion was a directive to affirm the ALJ's June 2, 2004, ID in its entirety. EBC Br. 1-2. The only issue before the Federal Circuit on appeal was whether or not the claims at issue were invalid for indefiniteness. *Energizer Holdings,* 435 F.3d 1366, 1371 ("[n]o other issues of validity and infringement are before us on appeal").

U.S. 883, 123 S.Ct. 105, 154 L.Ed.2d 141 (2002). *See also Intergraph Corp. v. Intel Corp.*, 253 F.3d 695, 697-698 (Fed. Cir. 2001). While the law of the case doctrine encompasses only those issues previously determined, the law is clear that it comprehends things decided by necessary implication as well as those decided explicitly. *Wheeler v. City of Pleasant Grove,* 746 F.2d 1437, 1440 (11th Cir.1984); *see also Intergraph Corp. v. Intel Corp.*, 253 F.3d 695, 697-698 (Fed. Cir. 2001).

We also reject EBC's argument concerning claim construction. EBC Br. 2-4. That argument effectively asks us to read the claim language "said zinc anode" as "said zinc." However, according to the Federal Circuit, "said zinc anode" refers to the "anode gel" of the claimed electrochemical cell. Thus, by necessary implication, the Court rejected EBC's construction. It is the Court's construction and not EBC's that must govern. As discussed below, under the Court's construction, the asserted claims are invalid for failure to meet the written description requirement and, further, are not infringed by respondents' products.

B. The Written Description Requirement

1. Applicable Law

A patent carries a statutory presumption of validity, 35 U.S.C. § 282. Respondents, who argue that the asserted claims are invalid, have the burden of showing invalidity by clear and convincing evidence. *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1355 (Fed. Cir. 1999).

35 U.S.C. § 112 requires that "[t]he specification shall contain a written description of the invention...." 35 U.S.C. § 112, ¶ 1 (2000). The written description requirement requires, *inter alia*, that the patentee provide sufficient description to show one skilled in the art that the inventor possessed the claimed invention at the time of filing. *Univ. of Rochester v. G.D. Searle* &

Co., 358 F.3d 916, 926-28 (Fed. Cir. 2004), *rehearing denied*, 375 F.3d 803, *cert denied*, 543 U.S. 1015 (2004). The specification must describe the claimed subject matter in terms that establish that the applicant was in possession of the claimed invention, including all the elements and limitations. *Id.* at 926. The "written description" requirement is distinct from the enablement requirement. *Id.* at 920; *Enzo Biochern Inc. v. Gen-Probe, Inc.*, 323 F.3d 956, 963 (Fed. Cir. 2002). Whether the written description requirement is met is a factual determination. *Invitrogen Corp. v. Clontech Labs.*, Inc., 429 F.3d 1052, 1072 (Fed. Cir. 2005).

2. Failure to Meet the Written Description Requirement

Respondents argue that the asserted claims are invalid, *inter alia*, for failure to meet the written description requirement. Golden Power Respondents Brief ("Golden Power Br.") 4-7, PT Brief ("PT Br.") 7-8. The IA does not argue that the claims are invalid for failure to meet the written description requirement, but argues that the asserted claims are invalid under 35 U.S.C. § 112 ¶ 2 because the asserted claims do not "claim the subject matter which the applicant regards as his invention," an argument also made by at least the Golden Power respondents. IA Br. 12-13, Golden Power Br. 7-8.

EBC's response is based on its argument that the phrase "said zinc anode" in the claim means the zinc powder used in the anode gel of the claimed electrochemical cell and that it is the zinc powder in the gel that has the claimed gel expansion characteristics, as measured through a test cell. EBC Br. 2-4; EBC Reply 2-5, 8-9. As noted above, this construction of "said zinc anode" is inconsistent with that adopted by the Federal Circuit, and therefore cannot be accepted.

As discussed above, the Federal Circuit determined that despite the lack of explicit antecedent basis for "said zinc anode," the asserted claims are definite. *Energizer Holdings,* 435 F.3d 1366, 1371. Specifically, the Federal Circuit held that the term "anode gel" in claim 1 is by implication the antecedent basis for "said zinc anode." *Id.* Thus, "said zinc anode" in claim 1 refers to the "anode gel" (the anode) of the claimed "electrochemical cell," as argued by respondents.

Applying the claim construction mandated by the Federal Circuit, claim 1 is invalid because the specification does not "contain a written description of the invention..." as required by 35 U.S.C. § 112 ¶ 1 (2000). The "anode gel" of the claim is the anode of the completed electrochemical cell destined for consumers. The claim language "after being discharged ..." specifically calls for the discharge of that anode (and only that anode) in the specified manner. No other anode is recited in the claims. As noted, the composition of the anode of the test cell

described in the specification is specified, while that of the anode of the electrochemical cell permits additives which could affect its expansion properties. Neither the test cell nor its anode are recited in the claims. Nor is there any language in the claims that establishes any relationship between the anode of the electrochemical cell and the (different) anode of the test cell, the only cell which the specification describes as being discharged in accordance with the claim language.[9] While calling for the anode of the electrochemical cell to be discharged in accordance with the parameters set out in the claims may be illogical, this is what is called for by the claims and we are not permitted to redraft those claims to supply different or missing language or to provide language to supply any missing connection between the claimed anode gel of the electrochemical cell and the unclaimed anode gel of the test cell.

In contrast to the claims, the specification does not describe the anode of the electrochemical cell as being discharged in accordance with the claim language. Rather, it only describes the anode gel (anode) of the test cell as being so discharged. Thus, the specification associates the language "discharged for 161 minutes to 15% depth of discharge at 2.88A" only with the measurement or test cell, which is not referred to in the claim. *Id.*

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[9] Nowhere in the specification is there any mention of removing the anode gel from a completed consumer electrochemical cell and testing this anode gel by the disclosed method.

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The specification does not associate the discharge language with the "electrochemical cell" of the claims or with the anode gel (anode) of that cell. There is thus no description in the specification of an "electrochemical cell" destined for consumers that is to be discharged for 161 minutes to 15% depth of discharge at 2.88A and no indication in the specification that the patentee was ever in possession of such a cell. Nor is there any description in the specification of an anode gel (anode) of such an electrochemical cell being so discharged.

Further, since the "anode gel" referred to in the claims is the anode of the claimed electrochemical cell, in order for the claimed electrochemical cell to satisfy the discharge language in the claim, the anode gel (anode) of the electrochemical cell would have to contain 63 grams of zinc."[10] EBC has

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[10] There is no dispute that according to Faraday's Law, an anode (anode gel) with zinc as the active anode component which is "discharged" for "161 minutes to 15% depth of discharge at 2.88A", as stated in claim 1, would have to contain 63 grams of zinc. In Complainants' post-hearing brief, they state that Faraday's Law:

"...[d]ictates that if you discharge 63 grams of zinc powder for 161 minutes at 2.88 amps, the zinc will be discharged to a 15% depth of discharge. (CFF 1.154.)"

EBC Post-Hearing Brief xxi.

Complainants further state that their scientist, Dr. Scarr, the sole inventor of record for the '709 patent,

"calculated 161 minutes would be needed for 2.88 amps run through 63 grams of zinc in order to discharge the zinc to 15% depth of discharge level. [sic] *These are the*

presented nothing in its briefs and there is nothing in the specification to suggest that the patentee was ever in possession of an electrochemical cell (as opposed to a test cell) having an anode gel containing 63 grams of zinc at the time the application for the patent was filed. The specification contains no description of such a cell. The specification does contain a description of a test cell which has an anode gel (anode) containing 63 grams of zinc, but this test cell is not the "electrochemical cell" of the claims nor is it referred to elsewhere in the claims.

For the foregoing reasons, we determine that the asserted claims are invalid for failure to meet the written description requirement. Further, as discussed below, we determine that even if the asserted claims are valid, EBC has failed to show that they are infringed by the respondents' products.

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parameters disclosed in the '709 patent." *Id.* 23 (Emphasis added.).

Additionally, complainants state that Dr. Scarr knew

> "that the zinc powder samples were discharged for 161 minutes because the amount of zinc was 63 grams which can be calculated from Faraday's Law. (CFF 1.165.)" *Id.* 24.

C. Infringement

1. Applicable Law

Whether a claim has been infringed requires a two-step analysis. "First, the claim must be properly construed to determine its scope and meaning. Second, *the claim as properly construed must be compared to the accused device or process.*" *Carroll Touch, Inc. v. Electro Mech. Sys., Inc.*, 15 F.3d 1573, 1576 (Fed. Cir. 1993). (Emphasis added.) The patentee bears the burden of proving infringement. *Ultra-Tex Surfaces, Inc. v. Hill Bros. Chemical Co.*, 204 F.3d 1360, 1364 (Fed. Cir. 2000). The patentee must meet that burden by a preponderance of the evidence. *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 859 F.2d 878, 889 (Fed. Cir. 1988).

2. EBC's Failure to Show Infringement

Respondents and the IA argue that the Federal Circuit's claim construction necessarily results in a finding of non-infringement. Golden Power Br. 3-4; PT Br. 3-5; IA Br. 11-12. EBC's response is again premised on adoption of its earlier-argued claim construction, a construction which, as noted above, is inconsistent with the Federal Circuit's opinion and which cannot be accepted. In view of the claim construction by the Federal Circuit, there is no evidence to support a finding of infringement for any of the respondents. Specifically, there is no evidence that the accused cells have an anode gel

(anode) that is or can be discharged in accordance with the language of the claims. As discussed *supra,* in order to meet the discharge limitation of the claims "after being discharged for 161 minutes to 15% depth of discharge at 2.88A," each anode (anode gel) of the accused cells must contain 63 grams of zinc.[11] Nothing in the record shows that any of the respondents' accused products have an anode gel which contains 63 grams of zinc. To the contrary, EBC has conceded that "each of [r]espondents' AAA, AA, C, D, and 9-volt batteries do not contain 63 grams of zinc." EBC Post-Trial Rebuttal Brief 23-24.[12]

VI. OTHER ISSUES

During the course of the investigation, in addition to failure to meet the written description requirement and non-infringement, respondents raised numerous defenses, *e.g.,* improper inventorship, anticipation, obviousness, failure to

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[11] The claims refers to a single electrochemical cell and it is that cell that must have an anode gel composed of, *inter alia,* 63 grams of zinc.

[12] EBC has not argued that the smaller amounts of zinc in respondents' cells are equivalent to the 63 grams of zinc required by the claims. Such an argument would, in any event, be unavailing since it would require vitiation of the "discharged for 161 minutes to 15% depth of discharge at 2.88A" claim limitation, which, as noted above, is uniquely associated with 63 grams of zinc. The law does not permit an equivalents analysis that vitiates claim limitations. See, *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.,* 520 U.S. 17, 39 n. 8.

disclose best mode, lack of enablement, inequitable conduct, and failure to reflect what the inventor regarded as his invention. Except for the last named, none of these defenses was raised by the parties in their submissions to the Commission in response to the Commission Order of April 14, 2006. Given our disposition of this investigation, we do not reach these issues and thus make no determination with respect to them. For the same reason, we do not reach the request of respondent Winner to re-open the hearing record, nor respondent Ningbo Baowang's additional comments regarding whether it is licensed under the '709 patent.

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
CERTAIN ZERO-MERCURY-ADDED ALKALINE BATTERIES, PARTS THEREOF, AND PRODUCTS CONTAINING SAME	)	**Inv. No. 337-TA-493 (Remand)**

DISSENTING OPINION OF VICE CHAIRMAN SHARA L. ARANOFF AND COMMISSIONER CHARLOTTE R. LANE

This investigation is before the Commission following a remand order by the U.S. Court of Appeals for the Federal Circuit in *Energizer Holdings, Inc. v. International Trade Comm'n*, 435 F.3d 1366 (Fed. Cir. 2006). Prior to the appeal, the Commission found claim 1 of U.S. Patent No. 5,464,709 ("the '709 patent") to be invalid as indefinite, with its analysis centering on the term "said zinc anode." The Federal Circuit reversed the Commission's indefiniteness finding, and held that the antecedent basis for the term "said zinc anode" is "anode gel." *Energizer Holdings*, 435 F.3d at 1371. While the court resolved the meaning of the term "said zinc anode," the remaining claim terms

remain to be construed in light of the court's holding.

We believe the Commission should remand the investigation back to the presiding administrative law judge with instructions to construe the remaining claim terms in accordance with the court's holding that the antecedent basis for the "said zinc anode" is "anode gel." Although we find the issue a close one, we do not find that claim 1 fails to meet the written description requirement of 35 U.S.C. § 112 ¶1 for the reason explained by the majority.

Therefore, we respectfully dissent from the majority opinion.[1]

At issue is the highlighted text from claim 1:

> An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode component, and an *anode gel* comprised of zinc as the active component, wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell and said zinc anode *has a gel expansion of less*

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[1] We concur with the majority in rejecting EBC's contention that the Federal Circuit directed the Commission to affirm the ALJ's Initial Determination in its entirety. We also concur with our colleagues in rejecting EBC's argument to the extent that it would have us read the claim term "said zinc anode" to mean "said zinc."

> *than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.*

'709 patent, col 10, lines 56-64 (emphasis added).

We understand the disputed language of claim 1 to indicate that the anode gel exhibits a certain property ("has a gel expansion of less than 25%") when subjected to specific parameters ("discharged for 161 minutes to 15% depth of discharge at 2.88A"). Consistent with the Federal Circuit's decision in *Abbott Laboratories v. Andrx Pharmaceuticals, Inc.*, we consult the specification "[i]n order to understand more fully these specific parameters" of the claim. 452 F.3d 1331, 1339 (Fed. Cir. 2006) (court looking to the specification for elaboration of the parameters recited in the claims). See also *Phillips v. AWH Corp*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) ("the claims 'must be read in view of the specification, of which they are a part'") (quoting *Markman v. Westview Instruments*, 52 F.3d at 967, 979 (Fed. Cir. 1995) (en banc)).

Based on the specification, we conclude that one of ordinary skill in the art would understand that what is claimed is an electrochemical cell with an anode gel that has a gel expansion of less than 25 percent, and that this property of the anode gel is evaluated in a "measurement cell" according to the parameters more fully described in the specification. '709 patent, col. 4, lines 38-45 (indicating that *[f]or the cells of this invention*, the expansion rate of the *anode gel* is measured

according to the following procedure" that involves the use of a *"measurement cell")* (emphasis added). We also find that the specification relates the test performed in the measurement cell to the claimed electrochemical cell. The specification indicates that the anode gel selected for use in the electrochemical cell must exhibit the required property when subjected to the specified parameters in the measurement cell. *See, e.g.*, col. 4, lines 12-37 (describing the need to identify "low expansion zinc . . . determined by comparing the amount of expansion of different types of zinc *anode gel* mixes") (emphasis added); col. 4, lines 38-45 (indicating that *"[f]or the cells of this invention,* the expansion rate of the *anode gel* is measured according to the following procedure" that involves the use of a *"measurement cell")* (emphasis added); and col. 5, lines 41-43 (indicating that the "low expansion zinc useful *in the cells of this invention* typically exhibit a [relative volume expansion rate] of less than 40%, *preferably less than 25%* . . . .") (emphasis added).[2] Accordingly, we conclude that the specification contains the required written

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[2] While the specification sometimes uses the phrase "low expansion zinc," we understand this term to be a shorthand reference to anode gels containing low expansion zinc. The specification does not indicate that zinc itself may expand, or disclose a test for measuring any such expansion. Instead, the specification discloses the desirability of zinc that results in low expansion when incorporated in an anode gel, and it discloses a test to measure "[f]or the cells of this invention, the expansion rate of the *anode gel* . . . . " Col. 4, lines 38-39 (emphasis added).

description of the invention, and that the specification relates the test performed in the measurement cell to the anode gel of the electrochemical cell of claim 1.[3] As a result, we conclude that claim 1 does not fail to meet the written description requirement of 35 U.S.C. § 112 ¶1 for the reason articulated by the majority.[4] Had this view commanded a majority, we would have remanded the investigation to the presiding administrative law judge for further proceedings in accordance with the Federal Circuit's holding that the antecedent basis for the claim term "said zinc anode" is "anode gel."

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[3] In opposition to our reading of the claim, the Commission Investigative Attorney asserts that the anode gel of the electrochemical cell "may contain ingredients, in addition to zinc powder, that would affect the gel expansion of the anode gel, such as organic and inorganic corrosion inhibitors." Reply of the Office of Unfair Import Investigations to Complainant's Brief Submitted Pursuant to the Commission's Order of April 14, 2006 at 2-3. While the specification does appear to disclose the optional use of certain additives (see col. 5, line 52 to col. 6, line 51), such does not undermine our construction of claim 1. The specification, elaborating on the claim terms, does not indicate that any optional corrosion inhibitors are incorporated into the anode gel that undergoes the disclosed procedure in the measurement cell. All that is required is that the anode gel exhibit a gel expansion of less than 25 percent under the conditions spelled out in the specification, which conditions do not contemplate the testing of optional additives.

[4] We do not decide whether claim 1 may fail to meet the written description requirement on other grounds. We would have remanded to the ALJ to decide any arguments as to this and any other issues.

APPENDIX C – DECISION OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DECIDED JANUARY 25, 2006

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

05-1018

435 F.3d 1366 (Fed. Cir. 2006)

ENERGIZER HOLDINGS, INC. and
EVEREADY BATTERY COMPANY, INC.,

Appellants,

v.

INTERNATIONAL TRADE COMMISSION,

Appellee,

and

PT INTERNATIONAL CHEMICAL
INDUSTRIAL CO. LTD.,

Intervenor,

and

GOLDEN POWER INDUSTRIES, LTD.,
GUANGDONG CHAOAN ZHENGLONG
ENTERPRISE CO., LTD.,
GUANGZHOU TIGER HEAD BATTERY

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GROUP CO., LTD.,
FUJIAN NANPING NANFU BATTERY CO., LTD.,
HI-WATT BATTERY INDUSTRY CO., LTD., NINGBO
BAOWANG BATTERY CO., LTD., SICHUAN
CHANGHONG ELECTRIC CO., LTD.,
ZHEJIANG 3-TURN BATTERY CO., LTD.,
and ZHONGYIN (NINGBO) BATTERY CO., LTD.,

Intervenors.

Randall G. Litton, Price, Heneveld, Cooper, DeWitt & Litton, LLP, of Grand Rapids, Michigan, argued for appellants. With him on the brief were Eugene J. Rath III and Matthew J. Gipson; Of counsel on the brief were V. James Adduci II and Maureen F. Browne, Adduci, Mastriani & Schaumberg, L.L.P., of Washington, DC. Of counsel were Michael L. Doane, David F. Nickel, Sarah E. Hamblin and S. Alex Lasher.

Wayne W. Herrington, Attorney, Office of the General Counsel, United States International Trade Commission, of Washington, DC, argued for appellee. With him on the brief was James M. Lyons, General Counsel. Of counsel was Neal J. Reynolds, Attorney.

Kent R. Stevens, of Washington, DC, argued for intervenor PT International Chemical Industrial Co., Ltd.

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Steven P. Hollman, Hogan & Hartson L.L.P., of Washington, DC, argued for intervenors Golden Power Industries, Ltd., et al. With him on the brief were Christopher T. Handman, Susan M. Cook and Jessica L. Ellsworth; Of counsel on the brief were William E. Thomson, Jr., Wei-Ning Yang, Yoncha L. Kundupoglu and Olga Berson, of Los Angeles, California. Of counsel was Robert B. Wolinsky.

Appealed from: United States International Trade Commission

Appendix C

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

05-1018

435 F.3d 1366 (Fed. Cir. 2006)

ENERGIZER HOLDINGS, INC. and EVEREADY BATTERY COMPANY, INC.,

Appellants,

v.

INTERNATIONAL TRADE COMMISSION,

Appellee,

and

PT INTERNATIONAL CHEMICAL INDUSTRIAL CO. LTD.,

Intervenor,

and

GOLDEN POWER INDUSTRIES, LTD., GUANGDONG CHAOAN ZHENGLONG ENTERPRISE CO., LTD., GUANGZHOU TIGER HEAD BATTERY GROUP CO., LTD., FUJIAN NANPING NANFU BATTERY CO., LTD.,

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HI-WATT BATTERY INDUSTRY CO., LTD.,
NINGBO BAOWANG BATTERY CO., LTD.,
SICHUAN CHANGHONG ELECTRIC CO., LTD.,
ZHEJIANG 3-TURN BATTERY CO., LTD.,
and ZHONGYIN (NINGBO) BATTERY CO., LTD.,
Intervenors.

DECIDED: January 25, 2006

Before NEWMAN, Circuit Judge, ARCHER, Senior Circuit Judge, and SCHALL, Circuit Judge.

NEWMAN, Circuit Judge.

Energizer Holdings, Inc. and Eveready Battery Company, Inc. (collectively "EBC") appeal the ruling of the International Trade Commission in an action under section 337 of the Tariff Act of 1930 as amended (19 U.S.C. §1337), holding all of the claims of EBC's United States Patent No. 5,464,709 ("the '709 Patent") invalid for failure to comply with 35 U.S.C. §112 ¶2.[1] We reverse the holding of invalidity and remand for further proceedings.

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[1] In re Certain Zero-Mercury-Added Alkaline Batteries, Parts Thereof, and Products Containing Same, Inv. No. 337-TA-493 (Int'l Trade Comm'n, June 2, 2004 (Initial Determination); October 1, 2004 (Final Determination)).

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The Invention

The '709 patent is for an electrolytic alkaline battery cell that is substantially free of mercury. Alkaline battery cells typically contain an electrolyte such as potassium hydroxide, a metal oxide cathode such as manganese dioxide, and a zinc anode. A detrimental characteristic of alkaline cells has been corrosion of the zinc after partial discharge, producing hydrogen gas which exerts internal pressure, causing the cell to leak. A widely used corrosion inhibitor in such cells is mercury, which amalgamates with the zinc and inhibits hydrogen formation. Mercury, however, is an environmental pollutant, and extensive effort has been devoted to reducing or eliminating the mercury content in alkaline batteries.

The '709 patent describes the discovery that a cause of gas-producing corrosion is the presence of trace impurities in the zinc used in the anode, and that upon identification and elimination of these impurities, the addition of mercury can be eliminated or substantially reduced. The electrolytic cells at issue are described as "zero-mercury-added" batteries. EBC charged the respondents/Intervenors with violation of 19 U.S.C. §1337 based on their importation into the United States, sale for importation, and sale within the United States, of batteries asserted to infringe the '709 patent.

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In the Commission proceedings, the Administrative Law Judge construed the patent claims and held them valid and infringed. The Commission rejected the ALJ's claim construction and held all of the claims invalid for indefiniteness under 35 U.S.C. §112 ¶2, on the ground that the claim term "said zinc anode" lacks antecedent basis in the claim, and that the claims are unclear or ambiguous. EBC challenges this ruling, arguing that the meaning of "said zinc anode" and other usages in the claims, viewed in light of the specification, would be readily understood by persons of ordinary skill in the field of the invention, and that the absence of antecedent basis is not an invalidating flaw.

Standard of Review

We review the Commission's decision on the criteria established by 19 U.S.C. §1337(c) and the Administrative Procedure Act. In accordance with the APA, agency factual findings are sustained unless they are arbitrary, capricious, or unsupported by substantial evidence, and agency rulings of law are reviewed for correctness. 5 U.S.C. §706(2)(E). See Jazz Photo Corp. v. Int'l Trade Comm'n, 264 F.3d 1094, 1099 (Fed. Cir. 2001) (applying the APA to review of decisions of the International Trade Commission).

An analysis of claim indefiniteness under §112 ¶2 is "inextricably intertwined with claim construction." Atmel Corp. v. Information Storage Devices, Inc., 198 F.3d 1374, 1379 (Fed. Cir. 1999). See Datamize v.

Plumtree Software, Inc., 417 F.3d 1342, 1347-48 (Fed. Cir. 2005) ("'By finding claims indefinite only if reasonable efforts at claim construction prove futile, we accord respect to the statutory presumption of validity and we protect the inventive contribution of patentees, even when the drafting of their patents has been less than ideal.'") (quoting Exxon Research & Eng'g Co. v United States, 265 F.3d at 1371, 1375 (Fed Cir 2001)); Oakley, Inc. v. Sunglass Hut Int'l, 316 F.3d 1331, 1340-41 (Fed. Cir. 2003) (determination of claim definiteness "requires a construction of the claims according to the familiar canons of claim construction"). Accordingly, we give de novo review to the Commission's ruling of patent invalidity for claim indefiniteness.

35 U.S.C. §112 ¶2 requires that the patent specification shall "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." This provision both facilitates examination during the patent application stage, and upon grant serves to notify the public of what is patented. The reviewing tribunal must determine whether a person experienced in the field of the invention would understand the scope of the claim when read in light of the specification. See Howmedica Osteonics Corp. v. Tranquil Prospects, Ltd., 401 F.3d 1367, 1371 (Fed. Cir. 2005) (claim not indefinite due to ambiguity when meaning readily ascertained from the description in the specification); Personalized Media Communications, LLC v. Int'l Trade Comm'n, 161 F.3d 696, 705 (Fed. Cir. 1998).

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See generally Phillips v. AWH Corp., 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*) (claims are construed in the context of the specification and prosecution history, as they would be understood by persons in the same field of endeavor).

The Commission's Decision

The Commission held invalid independent claim 1 and dependent claims 2-7, for the claims all contain the usage to which the Commission objected. Claim 1 is as follows, with emphasis added to the term that was the focus of the Commission's decision:

> 1. An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode component, and an anode gel comprised of zinc as the active anode component, wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell and **said zinc anode** has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.

The Commission held the claim invalid because "said zinc anode" does not have an antecedent basis, the Commission explaining that "the term 'zinc anode' does not appear in the claim prior to the term 'said zinc anode.'" Final Det. at 22. The Commission also held that even if "said zinc anode" is construed to have as antecedent the "anode gel comprised of zinc as the active anode component" recited earlier in the

claim, the claim would still be indefinite because, as written, it requires that the anode of every cell has been "discharged for 161 minutes to 15% depth of discharge at 2.88A." The Commission reasoned that since it appears that these discharge parameters are intended to apply only to a test cell, and not that every cell must be discharged, this unclear and ambiguous claim drafting renders the claim "indefinite as a matter of law." The Commission also held that EBC's proffer of alternative constructions of "said zinc anode" was an admission of indefiniteness.

DISCUSSION

The Commission held the claim invalid because the term "said zinc anode" lacked an antecedent basis, and because of the claim's imprecise statement of the role of the test parameters. EBC argues that these flaws do not render the claim "insolubly ambiguous," in the words of Marley Mouldings, Ltd. v Mikron Industries, 417 F.3d 1356, 1361 (Fed. Cir. 2005), which held that when a claim "is not insolubly ambiguous, it is not invalid for indefiniteness." See also Bancorp Servs., L.L.C. v Hartford Life Ins. Co., 359 F.3d 1367, 1371 (Fed. Cir. 2004) ("We have held that a claim is not indefinite merely because it poses a difficult issue of claim construction; if the claim is subject to construction, i.e., it is not insolubly ambiguous, it is not invalid for indefiniteness.").

EBC argues that a person of ordinary skill in this field would readily understand the claim despite

imperfect drafting, for the specification makes clear that the test parameters included in the claim do not mean that every cell must be discharged for 161 minutes. EBC points out that the '709 patent is directed to a standard electrolytic alkaline cell, and that the specification clearly states that the purpose of the test is to identify zinc anode material used in the invention.

Claim definiteness is analyzed "not in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art." In re Moore, 439 F.2d 1232, 1235 (CCPA 1971). The definiteness inquiry "focuses on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the rest of the specification." Union Pac. Res. Co. v. Chesapeake Energy Corp., 236 F.3d 684, 692 (Fed. Cir. 2001). Although neither the Commission nor the courts can rewrite claims to correct material errors, the issue here is not correction of error, but understanding of what the claim covers. When the meaning of the claim would reasonably be understood by persons of ordinary skill when read in light of the specification, the claim is not subject to invalidity upon departure from the protocol of "antecedent basis."

The requirement of antecedent basis is a rule of patent drafting, administered during patent examination. The Manual of Patent Examining Procedure states that "[o]bviously, however, the

failure to provide explicit antecedent basis for terms does not always render a claim indefinite." MPEP §2173.05(e) (8th ed. Rev. 2, May, 2004). In Slimfold Manufacturing Co. v. Kinkead Industries, Inc., 810 F.2d 1113, 1117 (Fed. Cir. 1987) the court held that "the missing antecedent clause, the absence of which was not observed by the examiner of the original patent or by Kinkead in its reissue protest documents, did not fail to inform the public during the life of the ['274] patent of the limits of the monopoly asserted." The Slimfold court held that addition of the missing antecedent basis during reissue was not a substantive change.

Whether this claim, despite lack of explicit antecedent basis for "said zinc anode," nonetheless has a reasonably ascertainable meaning must be decided in context. In prosecuting the '709 patent, the examiner made several objections to the claims, but the claims were not rejected or objected to on the ground of lack of antecedent basis. In Bose Corp. v. JBL, Inc., 274 F.3d 1354, 1359 (Fed. Cir. 2001) the court held that despite the absence of explicit antecedent basis, "If the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite." Moreover, we noted in Slimfold that an antecedent basis can be present by implication. Slimfold, 810 F.2d at 1116. See Cross Medical Products v. Medtronic Sofamor Danek, 424 F.3d 1293, 1319 (Fed. Cir. 2005).

Neither the Commission nor the Intervenors argued that they did not understand the intended

scope because of the absence of an antecedent. The Commission erred in holding that the need to construe a claim, or the proffer of alternative constructions, renders the claim indefinite. A claim that is amenable to construction is not invalid on the ground of indefiniteness. In Exxon Research & Engineering, 265 F.3d at 1375, the court stated that "if the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds." See also Novo Indus., L.P. v. Micro Molds Corp., 350 F.3d 1348, 1353 (Fed. Cir. 2003) (determining whether claim is "amenable to construction"); Honeywell Int'l, Inc. v. Int'l Trade Comm'n, 341 F.3d 1332, 1338 (Fed. Cir. 2003) (a claim is not indefinite because it is hard to construe). Here, it is apparent that the claim can be construed. In that regard, we conclude that "anode gel" is by implication the antecedent basis for "said zinc anode." The Commission's holding of invalidity on the ground of indefiniteness is reversed.

No other issues of validity and infringement are before us on appeal. The case is remanded for further proceedings.

REVERSED and REMANDED

APPENDIX D – COMMISSION OPINION OF THE UNITED STATES INTERNATIONAL TRADE COMMISSION ISSUED OCTOBER 1, 2004

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
CERTAIN ZERO-MERCURY-ADDED ALKALINE BATTERIES, PARTS THEREOF, AND PRODUCTS CONTAINING SAME	)	**Inv. No. 337-TA-493 (Remand)**

COMMISSION OPINION

On October 1, 2004, the Commission issued notice that it had determined to terminate the above-captioned investigation with a finding of no violation of section 337 on the basis that the asserted claims of U.S. Patent No. 5,464,709 ("the '709 patent") are invalid for indefiniteness. In that notice, the Commission also stated that it took no position on the other issues raised in this investigation and dismissed as moot the motion of respondent Ningbo Baowang Battery Co., Ltd., to terminate the investigation as to it as well as that respondent's motion to reopen the evidentiary

record. This opinion sets forth the reasons for the Commission's final determination.

I. INTRODUCTION

The Commission instituted this section 337 investigation on June 2, 2003, based on a complaint filed by Energizer Holdings, Inc. ("EHI") and Eveready Battery Company, Inc. ("EBC"), both of St. Louis, Missouri. 68 *Fed. Reg.* 32771 (June 2, 2003). The complaint, as supplemented, alleged violations of section 337 of the Tariff Act of 1930 in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain zero-mercury-added alkaline batteries, parts thereof, and products containing same by reason of infringement of claims 1-12 of the '709 patent.[1] The investigation was assigned to administrative law judge ("ALJ") Charles E. Bullock, who set a 15-month target date for completion of the investigation. ALJ Order No. 2 (June 2, 2003).

The complaint and notice of investigation named twenty-six respondents: Atico International, U.S.A., Inc. ("Atico"); Sichuan Changhong Electric Company, Ltd. ("Sichuan Changhong"); Changhong Battery Company ("Changhong"); Chung Pak Battery Works ("Chung Pak"); Dorcy International, Inc. ("Dorcy"); FDK Corporation ("FDK"); FDK Energy Co., Ltd. ("FDK Energy"); Fujian Nanping Nanfu Battery Co., Ltd. ("Nanfu"); Golden Million

[1] A copy of the '709 patent is attached to this opinion.

Enterprises, Inc. ("GME"); Golden Power Industries, Ltd. ("Golden Power"); Gold Peak Industries, Ltd. ("GPI"); GP Industries Limited ("GP Industries"); GP Batteries International, Ltd. ("GP Batteries"); Gold Peak Industries (North America), Inc. ("GPNA"); Guangdong Chaoan Zhenglong Enterprise Co., Ltd. ("Zhenglong"); Guangzhou Tiger Head Battery Group Co., Ltd. ("Tiger Head"); Hi-Watt Battery Industry Company, Ltd. ("Hi-Watt"); Maxell Corporation of America ("MCA"); Monster Cable Products, Inc. ("Monster"); Ningbo Baowang Battery Co., Ltd. ("Ningbo Baowang"); PT International Chemical Industrial Co., Ltd. ("PT"); The Mazel Company d/b/a The Powerhouse Group ("Mazel"); Universal Battery Corporation ("Universal"); Winner International, LLC ("Winner"); Zhejiang 3-Turn Battery Co., Ltd. ("3- Turn"); and Zhongyin Ningbo Battery Co., Ltd. ("ZY Ningbo").

Subsequent to institution, the complaint and notice of investigation were amended to add an additional firm, Hitachi Maxell, Ltd., as a respondent. The investigation was terminated as to claims 8-12 of the '709 patent.

Thirteen respondents have been terminated from the investigation for various reasons, namely: Changhong, GP Industries, FDK, FDK Energy, Monster, MCA, Hitachi Maxell, GME, GP Batteries, GPI, GPNA, Atico, and Dorcy. Thus, fourteen respondents remain in the investigation.

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The ALJ held an evidentiary hearing from February 18 through March 24, 2004. After the completion of post-hearing briefing, the parties presented closing arguments on April 28, 2004.

On May 21, 2004, respondent Ningbo Baowang moved to terminate the investigation as to it pursuant to Commission Rule 210.21(a)(1). In a notice issued June 7, 2004, the ALJ referred the motion to the Chairman of the Commission, stating that since responses to the motion were due on June 2, 2004, the date the ALJ issued his final initial determination, it was inappropriate for him to rule on the motion by June 2, 2004, the date on which jurisdiction in the case passed from him to the Commission.

On June 2, 2004, the ALJ issued his final initial determination ("ID"), including his recommended determination on remedy and bonding. In his ID, the ALJ found all fourteen remaining respondents in violation of section 337. Specifically, he found that all fourteen remaining respondents infringed claims 1-7 (or in the case of respondent Winner, claims 1-4, 6, and 7) of the '709 patent and that a domestic industry exists with respect to complainants' batteries protected by the '709 patent. He rejected numerous arguments that the '709 patent is invalid and unenforceable. He recommended issuance of a general exclusion order with respect to infringing zero-mercury-added primary alkaline batteries and a limited exclusion order directed to respondent Winner with respect to

infringing zero-mercury-added rechargeable alkaline batteries, but without coverage of downstream products. He also recommended issuance of cease and desist orders against respondents Mazel and Universal, and that the amount of the bond during the Presidential review period be set at 100 percent of entered value.

On June 14, 2004, respondents Golden Power, Zhenglong, Tiger Head, Nanfu, Hi-Watt, Ningbo Baowang, Sichuan Changhong, 3-Turn, and ZY Ningbo (collectively, "the Golden Power respondents") jointly filed a petition for review of the ALJ's final ID. The grounds for which these respondents sought review covered nearly all the conclusions of the final ID, including claim construction and invalidity for claim indefiniteness.

In addition to the aforementioned joint petition for review, respondent Ningbo Baowang filed a contingent petition for review of the ALJ's final ID (to be acted on in the event its pending motion to terminate was denied) and a motion to reopen the evidentiary record. Respondent PT filed its own petition for review of the ALJ's final ID, making its own independent arguments as well as incorporating the positions of the other respondents. Respondents Mazel and Universal filed a paper styled as a petition for review in which they incorporated by reference and relied on the petitions for review of the other respondents. Respondent Winner also filed a petition for review.

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On June 21, 2004, complainants filed a general response to the petitions for review, as well as separate responses to the petitions for review of Winner and Ningbo Baowang. The Commission investigative attorney (IA) filed a response to the petitions for review that same day.

On July 9, 2004, the Commission issued notice that it had determined to extend the time to decide whether to review the ALJ's final ID to August 19, 2004, and had determined to extend the target date for completion of this investigation to October 1, 2004.

On August 19, 2004, the Commission issued notice that it had determined to review the final ID in its entirety. The Commission stated that it was particularly interested in briefing on the issues of claim construction and indefiniteness, especially with respect to the following terms of claim 1 of the '709 patent: "said zinc anode"; "has a gel expansion of less than 25%"; and "after being discharged for 161 minutes to 15% depth of discharge at 2.88A". In addressing the question of claim construction, the Commission requested each party to (1) specifically identify those portions of the claim language, specification, and prosecution history (and other evidence, if appropriate) which support the construction it advocates, (2) state how the construction it advocates is supported by an adequate written description and enabling disclosure, and (3) demonstrate that the construction it advocates falls within the ambit of

permissible claim construction, as opposed to impermissible redrafting of claim language. The Commission also requested answers to the following questions:

1. With respect to the term "after being discharged" in claim 1, what is being discharged?

2. Whether and to what extent disclaimed claims 8-12 may be used in construing the remaining claims.

3. Whether and to what extent the prosecution history of the corresponding European patent (RX-4) may be used to construe the claims of the '709 patent.

4. What is meant by the term "depth of discharge" in claim 1?

5. Whether and how the asserted claims may be construed to cover rechargeable batteries.

The Commission also requested submissions on remedy, the public interest, and bonding. All parties remaining in the investigation filed written submissions. (Respondent Ningbo Baowang filed a further submission, ostensibly on remedy and bonding, but which focused on its May 21, 2004, motion to terminate it from the investigation.)

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II. STANDARD ON REVIEW

The Commission's determination on review of an ID is governed by Commission rule 210.45(c) (19 C.F.R. § 210.45(c)). Upon review of an ID, the Commission "examines for itself the record on the issues under review." *Certain Acid-Washed Denim Garments,* Inv. No. 337-TA-324 (USITC Pub. 2576 (Nov. 1992)). The Commission may affirm, reverse, or modify the ID in whole or in part. 19 C.F.R. § 210.45(c). It may also set aside or remand the ID in whole or in part. *Id.* In doing so, it may make any findings or conclusions that are in its view proper based on the record in the proceeding. *Id.*

III. THE PRODUCTS AT ISSUE AND THE ASSERTED PATENT

A. The Products at Issue

The imported products at issue are zero-mercury-added alkaline batteries. Alkaline batteries are the familiar batteries used in consumer and other products and come in various sizes. They are referred to as alkaline batteries because they employ an alkaline electrolyte. The use of the term zero-mercury-added is peculiar to the alkaline batteries which are the subject of this case and generally means that no mercury has been added to the battery components prior to their assembly into a battery.

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B. The '709 Patent

1. In General

As noted above, this investigation involves only one patent, the '709 patent, which is entitled "Alkaline Cells That Are Substantially Free Of Mercury." CX-1. It issued on November 7, 1995, based on Application Serial No. 349,164, filed on December 2, 1994. That application was a continuation of Application Serial No. 08/255,158, filed June 7, 1994, now U.S. Patent No. 5,395,714 ("the '714 patent").[2] In turn, Application Serial No. 08/255,158 was a continuation of Application Serial No. 08/082,147, filed June 24, 1993 (as corrected[3]), now U.S. Patent No. 5,364,715 ("the

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[2] The '714 patent (RX-6, GH51-0074-78) was issued on March 7, 1995, with only one claim, which read as follows:

> 1. An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode component, and an anode gel comprised of low expansion zinc which has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A, and a sealed container containing said electrolyte, cathode and anode gel.

On September 3, 2002, EBC filed a disclaimer of claim 1, notice of which was published in the *Official Gazette* of U.S. Patent and Trademark Office on June 24, 2003. RX-6, GH51-0071.

[3] The date was corrected via a certificate of correction, a copy of which is attached to the record copy of the '709 patent (CX-1).

'715 patent").[4] Finally, Application Serial No. 08/082,147 was a continuation of Application Serial No. 07/566,925, filed August 14, 1990, now abandoned.

The inventors named on the face of the '709 patent are Dale R. Getz, John C. Nardi, and Robert F. Scarr. However, a subsequently issued certificate of correction identifies Robert F Scarr as the sole inventor. CX-2. The patent is assigned on its face to Eveready Battery Company, Inc., of St. Louis, Missouri.

As originally issued, the '709 patent contained 12 claims. During the course of this investigation, the patentee disclaimed claims 8-12 and the complaint and notice of investigation were

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[4] The '715 patent (RX-7) was issued on November 15, 1994, with 29 claims, four of which are independent claims, including claim 1, which reads as follows:

> 1. An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as the active anode component, an anode gel comprised of zinc as the active anode component, and a burnished brass anode current collector wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell, and said zinc has a gel expansion of less than 25% after being discharged at 2.88A for 161 minutes at 15% depth of discharge.

The '709 patent is subject to a terminal disclaimer filed during prosecution to overcome an obviousness-type double patenting rejection over the '715 patent. RX-2, GP-001374-75.

amended to terminate the investigation as to those claims. The claims in issue are therefore claims 1-7. Claim 1 is the only independent claim. It claims:

> An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode component, and an anode gel comprised of zinc as the active anode component, wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell and said zinc anode has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.

2. Summary of the Specification

The purpose of the specification is to provide a written description of the claimed invention, how to make and use it, and the best mode contemplated by the inventor in carrying out the claimed invention. 35 U.S.C. § 112, 1st ¶. The specification of the '709 patent purports to describe alkaline cells (or batteries) which are "substantially free of mercury" and which accomplish this end through the use of a multi-component anode gel which uses so-called "low expansion" zinc as the active anode component. As discussed below, the specification consistently refers to the anode gel in its entirety as being the anode of the cell. The so-called "low expansion" zinc used in the anode gel is selected from available zinc powders by using a test to

measure what the specification refers to as the "specific expansion rate" ("SER") and/or "relative volume expansion rate" ("SRVER")[5] of a test anode gel mix made from 63 grams of the zinc powder being screened. The test employs a special electrochemical test cell and apparatus described in the specification. Zinc powders used in test anode gel mixes that pass the test, referred to as "low expansion" zincs[6], may then be used with other components to make the anode gels of the alkaline cells. A summary of the relevant portions of the various parts of the specification is set out below.

a. Field and Background of the Invention (CX-1, col. 1, ll. 10-60)

According to the specification of the '709 patent, "[t]his invention relates to alkaline electrochemical cells that are substantially free of mercury." CX-1, col. 1, ll. 13-14.

In discussing the background of the invention, the specification refers to alkaline electrochemical cells generally, stating that "[a]lkaline electrochemical cells typically contain an alkaline electrolyte, such as potassium hydroxide (KOH), a cathode comprised of a metal oxide such as

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[5] The specification is not clear as to several aspects of these measurements as well as related calculations that depend on those measurements. See n. 7, *infra*.

[6] There is no indication in the specification or suggestion by complainants that "low expansion" zincs are novel.

manganese dioxide, (MnO_2), and a zinc anode." CX-1. col. 1 , ll. 17-20. Such cells "provide excellent performance and are used throughout the world in many consumer applications." CX-1, col. 1, ll. 20-22. However, according to the specification, a detrimental characteristic of alkaline cells is the formation of hydrogen gas, which can be formed by corrosion of the zinc. CX-1, col. 1, ll. 23-25. The formation of hydrogen gas can increase the internal pressure of the cell, resulting in cell leakage if the pressure is not relieved. CX- 1, col. 1, ll. 25-27.

To inhibit corrosion of the zinc and consequent formation of hydrogen gas (and thus to alleviate cell leakage), the specification notes the prior art addition of mercury to the zinc. CX-1 , col. 1, ll. 29-33. However, as the specification also notes, the use of mercury to solve one problem creates another since mercury may add to environmental pollution. CX-1, col. 1, ll. 33-34.

To reduce the amount of mercury, certain metallic elements and their compounds, as well as certain organic compounds, have been used with the zinc. CX-1, col. 1, ll. 35-46. However, according to the specification, use of these inhibitors does not reliably permit the total removal of mercury from the cell and, in the case of organic inhibitors, does not inhibit gassing for cells that are partially discharged and then stored, though the use of such inhibitors is effective for undischarged cells. CX-1, col. 1, ll. 47-55. Thus, "an alkaline electrochemical cell that is substantially free of mercury has not

been commercialized," but "such a cell is still desired" because of "environmental concerns." CX-1 col. 1, ll. 57-60.

b. Summary of the Invention (CX-1, col. 1, l. 61-col. 2, l. 40)

According to this part of the specification, "[t]his invention is an electrochemical cell that is substantially free of mercury." CX-1, col. 1, ll. 63-64. More specifically, the cell of the invention "comprises an alkaline electrolyte, a cathode comprising a metal oxide as the active cathode component, and an anode comprised of zinc as the active anode component." CX-1, col. 1, ll. 64-67. According to the specification, the cells of the invention "do not exhibit leakage of cell components after being partially discharged via an electrical resistor to about 1.2 volts, and then stored under storage conditions of 21°C for ninety day [sic]." CX-1, col. 2, ll. 2-5. The summary of the invention then continues:

> In another aspect, this invention is an electrochemical cell that has less than two parts of mercury based on one million parts by weight of the cell. The cell is comprised of potassium hydroxide electrolyte solution; a cathode comprising electrolytic manganese dioxide and synthetic graphite; an anode gel comprising low expansion zinc, between about 0.01 mg to about 1 mg per gram of zinc of indium hydroxide, and between about

0.001 mg to about 0.1 mg per gram of zinc of methoxylated polyethylene oxide having an average molecular weight ranging from about 300 to about 700. The cell further employs a burnished brass anode current collector. The cell components are arranged in a sealed container in a manner effective to provide electrochemical energy, and such that the cell has a void volume of between about 6% and about 12% of the cell's internal volume.

In yet another aspect, this invention is an electrochemical cell that is substantially free of mercury. The cell comprises an alkaline electrolyte, a cathode and an anode arranged in a sealed container in a manner effective to provide electrochemical energy, wherein the anode is comprised of low expansion zinc as the active anode material.

In still yet another aspect, this invention is an electrochemical cell that is substantially free of mercury. The cell comprises an alkaline electrolyte, a cathode and an anode arranged in a sealed container in a manner effective to provide electrochemical energy, wherein the anode is a gel comprised of zinc as the active anode material, an indium-containing compound and an ethylene oxide polymer.

CX-1, col. 2, ll. 6-35.

The summary of the invention concludes by restating that "[t]he alkaline electrochemical cells of this invention are substantially free of mercury," that the cells "do not leak under conditions of normal use and storage," and that they "provide an effective amount of electrochemical energy to be useful as batteries." CX-1, co1.2, ll. 35-40.

c. Brief Description of the Drawings (CX-1, col. 2, ll. 41-47)

The '709 patent has two drawings, neither of which illustrates an alkaline cell intended for use by consumers, the kind of cell complainants argue is the object of the asserted claims. Rather, both drawings relate to the test cell and apparatus used for performing the test referred to in the specification to select "low expansion" zincs for use in making such an alkaline cell. Thus, Figure 1 "shows a cell diagram used in measuring the expansion of a zinc anode gel mix" and Figure 2 "shows a wiring diagram used in discharging a zinc anode gel mix." CX-1, col. 2, ll. 43-47. The "discharging" referred to in the description of Figure 2 is an important part of the procedure discussed in the specification for "measuring the expansion" of the "zinc anode gel mix", *i.e.*, the test mix.

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d. Detailed Description of the Invention (CX-1, col. 2, l. 48-col. 8, l. 57)

In the "Detailed Description of This Invention", the specification reiterates that the electrochemical cells of the invention are "substantially free of mercury" and then proceeds to describe the cells in further detail. CX-1, col. 2, ll. 51-52. The specification generally states that "[t]he electrochemical cells of this invention comprise an alkaline electrolyte, a cathode and an anode arranged in a sealed container in a manner effective to provide electrochemical energy, i.e. when the cell is placed in a circuit, electrochemical energy is provided to the circuit." CX-1, col. 3, ll. 11-16. It then proceeds to provide further detail with regard to the anode, the electrolyte, the cathode, and certain other components of the cell. Since it is the anode of the cell that is the component of interest in this case, we summarize the portions of the detailed description of the invention relating to it, without further detailing the other components of the cell.

In the detailed description of the invention, the specification refers to the anode as follows: "[a]n anode made of a mixture of active anode material, electrolyte, optionally an electrolyte-swellable binder such as a polyacrylic acid can be enclosed within the separator." CX-1, col. 3, ll. 30-32. Later on, the specification defines the "active anode material" as being zinc, preferably "low expansion

zinc," in powder form, which is combined with other ingredients to form an anode gel:

> Zinc is used as the active anode material in the cells of this invention. Preferably, the zinc is low expansion zinc, and is in powder form. The powdered zinc is combined with a binder, optional components, and an amount of the electrolyte solution to form a gel. Typically, the anode gel expands when it is discharged and then stored.

CX-1, col. 4, ll. 11-16.

The phrase "low expansion zinc" does not refer to expansion of the zinc, but to an anode gel containing the zinc, which expansion can be measured:

> The expansion rate due to gassing of fresh or discharged mixes of gelled zinc powder can be measured by the change in volume of the mix after being stored at expansion conditions. These conditions are, for example, storing for 24 hours at 71°C. The expansion behavior of the zinc is dependent on rate and current density. These conditions in turn depend on the amount of the anode mix and the dimensions and geometry of the cell. The term "low expansion" is a relative term, and is determined by comparing the amount of expansion of different types of zinc anode gel

> mixes. Generally, the zinc used to prepare the anode gel that expands the least will provide a lower gassing cell, and, thus, in this invention, "low expansion zinc" means zinc that expands to a lower degree relative to other zincs. The degree of expansion of zinc anode gels can be measured by preparing an anode gel, assembling a cell and discharging the cell. An amount of the gel is then removed from the cell, placed in a container and stored. After storing, the amount of expansion is measured and compared to the amount of expansion of undischarged gel that is stored under the same conditions.

CX-1, col. 4, ll. 18-37.

The specification states that "[f]or the cells of this invention, the expansion rate of the anode gel is measured according to the following procedure," which it then describes as the measurement of the expansion of a test anode gel mix via a two-step procedure. CX-1, col. 4, ll. 38-39. First, an "anode mix" is made of "63 weight percent zinc powder, 0.5 weight percent binder (Carbopol™940 is a suitable example), and 36.5 weight percent of aqueous potassium hydroxide electrolyte (37% aqueous solution) that contains 42.5 gm of zinc oxide per liter." CX-1, col. 4, ll. 40-44. While the specification uses the term "63 weight percent zinc powder", the ALJ found, and it is not disputed, the test anode mix must contain 63 grams of zinc powder. ID 53;

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Complainants' Opposition to Respondents' Petitions for Review 5-6. The aforementioned "anode mix" is used to make the anode of a so-called "measurement cell" of the type illustrated in Figure 1: "One hundred grams of the anode mix 15 is added into the cup 1 on top of the anode current collector 10." CX-1, col. 4, ll. 50-52. Once the "measurement cell" is assembled, it is "connected to a 10 A, 20V D.C. power supply 40" as shown in Fig. 2. CX-1, col. 5, ll. 1-2. The measurement cell is then "discharged to 15% depth of discharge at 2.88 A for 161 minutes as recorded by the timer 50." CX-1, col. 5, ll. 2-4.

After the discharge of the measurement cell is completed, a portion of the anode mix is treated as follows:

> After the discharge is completed, a portion of the anode mix is measured to the six milliliter level into four polypropylene graduated cylinders that have a capacity of ten milliliters. The cylinders should contain about 17 grams of anode mix. The same amount of fresh undischarged anode mix should be measured into four other ten milliliter graduated cylinders. About 1 milliliter of low density, high vapor pressure oil, such as pump oil, that is insoluble in and inert to the electrolyte is added on top of the mix in each cylinder. The mix level and oil level is [sic] recorded, and the density of the

mix can be calculated. It is approximately 2.7+/-0.15 g/cc.

The cylinders are placed in an oven preheated to 71°C., and are kept there at that temperature for twenty-four hours. The cylinders are then removed and cooled for about one half hour.

CX-1, col. 5, ll. 11-26.

Once the above-mentioned processing of the discharged and undischarged anode gel samples has been completed, the mix and oil levels are read and certain ratios are calculated:

The mix and oil levels are then read. The specific expansion rate of the mix (SER) is calculated from the formula:

$$SER = \frac{\text{Volume of expansion of mix (ml)}}{\text{(Weight of anode in mix in cylinder (g))} \times \text{(Fraction of Zn in the mix)}}$$

The relative volume expansion rate (SRVER) can also be measured and calculated from the formula:

$$SRVER = \frac{\text{Volume of expansion of mix (ml)}}{\text{Original volume of mix (ml)}} \times 100$$

CX-1, col. 5, ll. 26-40.

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According to the specification, "[t]he low expansion zinc useful in the cells of this invention typically exhibit a SRVER of less than 40%, preferably less than 25%, more preferably less than 20%, and more [sic] preferably less than 15%." CX-1, Col. 5, ll. 41-44.[7]

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[7] There are several ambiguities in the calculation of SER and SRVER as referred to in the specification. First, the specification requires the preparation of and measurements on discharged and undischarged mix, but the two calculations refer only to "mix" without specifying whether it is discharged or undischarged mix. Second, the specification requires measurement of both mix levels and oil levels, but does not state whether volume is measured with reference to the mix level or the oil level. Third, the specification does not indicate whether the term "volume of expansion of mix" refers to the increase in volume of the mix or to the total volume of the mix. Fourth, while the specification requires that four cylinders each of discharged and undischarged mix are to be prepared, there is no indication of whether or how the measurements of these samples relate to one another. Fifth, the specification does not indicate whether these measurements are to be averaged and, if so, how, nor does it provide any criteria for excluding or including any particular measurement in the calculations. Sixth, the significance of SER is unclear and it is not mentioned again in the specification.

It is also unclear how SER and SRVER relate to other references in the specification. At col. 4, ll. 18-21, the specification states:

> The expansion rate due to gassing of fresh or discharged mixes of gelled zinc powder can be measured by the change in volume of the mix after being stored at expansion conditions.

At col. 4, ll. 31-37, the specification states:

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> The degree of expansion of zinc anode gels can be measured by preparing an anode gel, assembling a cell and discharging the cell. An amount of the gel is then removed from the cell, placed in a container and stored. After storing, the amount of expansion is measured and compared to the amount of expansion of undischarged gel that is stored under the same conditions.

Taken together, these passages, especially the second, appear to suggest that the determination of the "expansion" requires a comparison of the "expansions" of discharged and undischarged gels, but the calculation of SER and SRVER as referred to in the specification does not appear to call for such a comparison.

Confusingly, in addition to referring to SER and SRVER, the specification refers to iron content as "another parameter" to identify useful zincs:

> Another parameter that has been found to be useful in identifying zinc for cells of this invention is the amount of iron in the zinc. Advantageously, the zinc has less than 10 parts of iron per million parts by weight of zinc. Preferably, the zinc contains less than 5 ppm of iron. More preferred is zinc that contains less than 3 ppm of iron.

CX-1, col. 5, ll. 45-51.

It is unclear from this portion of the specification whether the iron content is in addition to or in lieu of a low SRVER number for the zinc. Further on, the specification refers to a "low-iron or low expansion zinc," but in the only examples given, low iron is used with zinc having a low SRVER number. CX-1, col. 7, ll. 38-49; CX-1, col. 9, ll. 2-4.

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The specification states that "[t]he cells of this invention employ additives that inhibit the corrosion of zinc," referring to several organic compounds and indium-containing compounds. CX-1, col. 5, l. 52-col. 6, l. 46. Where these additives are used, the specification discusses preparation of the anode as follows:

> The anode is prepared by mixing the zinc powder, ethylene oxide polymer, optional binder and an amount of electrolyte effective to form a paste or gel. Advantageously, the indium-containing compound is also added. This paste or gel can then be injected into the container.

CX-1 col. 6, ll. 47-51.

According to the specification, cells of the invention exhibit no leakage under conventional storage conditions:

> The cells exhibit no leakage of the cell components after discharging the cells through an electrical resistor to 1.2 volts, and after being stored at 21°C. for ninety days. Preferably, the cells of this invention exhibit no leakage after being discharged at 0.8 volts and then stored for the stated period. The cells can also exhibit no leakage after being discharged through an electrical resistor to 1.2 volts and then stored at 45°C. for thirty days, and preferably, after being

discharged to 0.8 volts and so stored. More preferably, the cells exhibit no leakage when discharged through an electrical resistor to 1.2 volts, and then stored at 71°C. for three days, and most preferably, after being discharged to 0.8 volts and so stored. Most preferably, the cells exhibit no leakage when discharged through an electrical resistor to 1.2 volts, and then stored at 71°C. for seven days and preferably, after being discharged to 0.8 volts and so stored.

These discharge and storage conditions are representative of the actual use made of the cells or batteries. For example, the batteries can be used in a device, such as a radio. However, the battery is typically not fully discharged. The device and the battery may then be put aside for a period before they are used again. The cells of this invention exhibit no leakage when conventionally used and so stored.

CX-1, col. 7, l. 52-col. 8, l. 8.

The reference to "discharge" in above-quoted part of the specification refers to discharge of the alkaline cell intended for use by consumers, not discharge of the test cell employed in screening zincs for use in making the anode gel of that alkaline cell.

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e. Examples (CX-1, col. 8, l. 58- col. 10, l. 55)

The examples in the patent are consistent with the preceding portions of the specification. In Example 1 of the patent, the anode of the alkaline cell is described as follows:

> The anode contains 0.01 mg methoxylated polyethylene oxide known as Carbowax™ 550 per gram of zinc and 0.02 mg of indium hydroxide per gram of zinc. The zinc is 6.2% SRVER expansion zinc, and contains 5.1 ppm of iron. The anode formulation is:

Component	Weight %
Zinc	63%
KOH	36%
Carbopol™ C940 (Binder)	0.6%
Carbowax™ 550	0.01 mg per gm of zinc
Indium Hydroxide	0.02 mg per gm of zinc

> Trace amounts of zinc oxide and sodium silicate are added to yield 100 weight percent. These are used for their conventional purposes. The total anode weight is 14.43 grams and the amount of zinc in the anode is 9.1 grams.

CX-1, col. 8, l. 67-col. 9, l. 17.

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The alkaline cell in Example 2 (and thus its anode) is the same as for Example 1, except that no indium hydroxide is added as part of the anode. CX- 1, col. 10, ll. 16- 18.

f. Relevant Conclusions Regarding the Specification

It is clear that in the specification and in both of the examples, the anode of the alkaline cell is the anode gel and the zinc is described as a component (the active anode component) of that anode gel. The zinc itself is never described as the anode.

It is also clear from the specification and both of the examples that the test for "low expansion" zincs discussed in the specification is a screening test used to select the zinc that is to be (or may be) incorporated into the anode gel of the alkaline cell. The specification nowhere describes performance of the screening test after the construction of any completed electrochemical cell (other than the test cell, which constitutes part of the apparatus for performing that test). Indeed, the only test indicated in the specification that might be performed after construction of a complete alkaline cell is one for leakage, as noted above, and in the examples, the only tests performed on the completed cells were for bulging and leakage. CX-1, col. 9, l. 40-col. 10, 1. 11 and col. 10, ll. 19-55.[8]

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[8] Nevertheless, complainants argue that the claims at issue must be construed to *not require* that the zinc of the anode gel of the alkaline cell, *i.e.*, the cell intended for use by

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C. Applicable Law (Claim Construction; Indefiniteness)

A patent has two basic components: (1) the specification, which (if consistent with the relevant statutory requirements) is a written description of the invention and the manner of making and using it; and (2) the claim(s), which must particularly point out and distinctly claim the subject matter that the patent applicant regards as his invention. 35 U.S.C. § 112, ¶¶ 1, 2. The claims of the patent measure the right to exclude. *See, e.g., Johnson & Johnston Assocs. Inc. v. R.E. Service Co., Inc.*, 285 F.3d 1046,1052 (Fed. Cir. 2002) (en banc).

The first step in determining whether a patent claim is infringed (as well as in determining its validity) is to interpret the scope and meaning of the claim language. *Markman v. Westview Instruments, Inc., 52* F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd* 517 U.S. 370 (1996). This interpretive step, referred to as *claim construction,* requires an analysis of the *intrinsic evidence* of record, which consists of the claims, the specification, and (if in evidence) the prosecution history of the patent before the PTO. *Markman,* 52 F.3d 967, 979-980. Evidence that lies outside the

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consumers, have been selected by performance of that screening test prior to the manufacture of that cell, a construction that appears to be both inconsistent with the specification and with the purpose of the screening test. Since we conclude that the claims are invalid for indefiniteness, as discussed *infra,* we do not reach this issue.

definition of intrinsic evidence is referred to as extrinsic evidence. Such evidence may be used for the court's understanding of the patent, but not to vary or contradict the terms of the claims. *Markman,* 52 F.3d 967, 981.

Claim terms are presumed to mean what they say and have the ordinary meaning that would be attributed to them by persons skilled in the relevant art. *Honeywell International, Inc. v. International Trade Commission,* 341 F.3d 1332, 1338 (Fed. Cir. 2003). While a patentee may choose to define a term in a special way, his intent to do so must be clear, either expressly or by implication, on the face of the specification. *Markman,* 52 F.3d 967, 979; *Vitronics Corporation v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1995). Claim construction is a question of law. *Markman,* 52 F.3d 967, 979, *aff'd,* 517 U.S. 370.[9]

Closely allied to claim construction is the requirement for claim definiteness set out in the second paragraph of 35 U.S.C. § 112, which provides:

> The specification shall conclude with one or more claims particularly pointing out and

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[9] We note that our reviewing court intends to revisit its claim construction rules, having recently granted a petition for rehearing en banc for that purpose. *Phillips v. AWH Corporation et al.*, Appeal Nos. 03-1269 and 03-1286 (Federal Circuit; Order of July 21, 2004).

distinctly claiming the subject matter which the applicant regards as his invention.

Claims are not indefinite simply because they are difficult to construe, but if a claim cannot be construed, it is indefinite and, as a consequence, invalid. *Honeywell,* 341 F.3d 1332, 1338-39. In determining whether a claim is definite, the tribunal must analyze whether one skilled in the art would understand the bounds of the claim when read in light of the specification. *Personalized Media Communications, LLC v. International Trade Commission,* 161 F.3d 696, 705 (Fed. Cir. 1998), citing *Miles Laboratories, Inc. v. Shandon, Inc.,* 997 F.2d 870, 875 (Fed. Cir. 1993). Like claim construction, indefiniteness is a question of law. *Id.*

If claims are invalid for indefiniteness, by definition they cannot be construed, and any issue that depends on the claims being construed, such as infringement, cannot be addressed. See, *Honeywell,* 341 F.3d 1332, 1342 (Commission's determination of claim indefiniteness affirmed, but determination of infringement vacated). In construing claims and in assessing whether those claims are indefinite, tribunals may not rewrite them. *Rhine v. Casio, Inc.,* 183 F.3d 1342, 1345 (Fed. Cir. 1999); *Allen Engineering Corp. v. Bartell Industries, Inc.,* 299 F.3d 1336, 1349 (Fed. Cir. 2002).

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IV. DETERMINATION OF NO VIOLATION

We determine that there is no violation of section 337 in this case because the asserted claims are invalid for indefiniteness. We do not reach and do not take a position on the other issues in this investigation. We deny as moot respondent Ningbo Baowang's motion to terminate the investigation as to it, as well as its motion to reopen the evidentiary record.

The ALJ held, and there is no dispute, that the term "said zinc anode" lacks an antecedent basis in the claim, *i.e.*, the term "zinc anode" does not appear in the claim prior to the term "said zinc anode." ID 57. Acknowledging the necessity of considering the intrinsic evidence, the ALJ construed "said zinc anode" as referring to "the zinc as the active anode component," by which he apparently meant "zinc powder." ID 60, 47. He rejected respondents' argument that the term "said zinc anode" refers to "the anode of the electrochemical cell." ID 57, 60. However, the only intrinsic evidence relied on by the ALJ was a statement made in connection with an amendment to application claim 45 (which became patent claim 1) on May 22, 1995. At that time, claim 45 read as follows:

> An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active anode component, and an anode gel comprised of

> zinc as the active anode component, wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell and said zinc anode gel has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.

RX-2, GP-001300.

Among the amendments made on May 22, 1995, was an amendment to claim 45, specifically, the deletion of the word "gel" after the term "zinc anode." RX-2, GP-001370. The only comment made by the applicant concerning this amendment was the statement:

> Claims 45, 48 and 49 have been amended to correct a grammatical error. It is the zinc which is to be tested, as set forth in the specification.

RX-2, GP-001372.

Relying on this statement in the prosecution history, the ALJ stated:

> This amendment shows that the applicant clearly did not intend "said zinc anode" to refer to the zinc anode gel, and that his intention was that the "said zinc anode" refer to the zinc.

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ID 59.

However, the language of claim 1 and the specification are inconsistent with defining the term "anode" (and thus the term "said zinc anode") as simply zinc. Claim 1 purports to be directed to "[a]n electrochemical cell." There is no dispute that such a cell must have an anode and it is clear that this is the "anode gel." As noted above in our summary of the specification, and as respondents point out, the specification clearly defines the "anode gel" as the anode of the alkaline cell (the electrochemical cell" of the claim). It is just as clear that the zinc employed as the "active anode component" of that "anode gel" (the anode) of the electrochemical cell, being defined as a component of the anode, is not defined to be the anode of that cell. Indeed, the specification never refers to "zinc as the active anode component" as the anode of the cell. To arrive at the result found by the ALJ and sought by complainants would require that we read "anode" out of "said zinc anode." As noted above, claim construction does not include rewriting the claims.

The portion of the prosecution history relied on by the ALJ is of little help to complainants. If anything, it further indicates that complainants erred in drafting claim 1. Indeed, the inventor testified that [

] However, the Commission is not in a position to correct claim drafting errors, as noted above.[10]

Respondents argue that "said zinc anode" means "anode gel." It is not clear that this construction is correct either, although it is supported by certain claim language and the specification (which equates "anode" with "anode gel"), since the claim would then require the anode gel of the "electrochemical cell" (the alkaline cell destined for consumers) be "discharged for 161 minutes to 15% depth of discharge at 2.88A," language that the specification associates only with the measurement or test cell, which is not referred to in the claim.

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[10] In contrast, the applicant (who has admitted error) *was* in such a position during prosecution, but failed to do so. Nor did he seek to do so after the patent issued, either by certificate of correction or reissue, though he did obtain two certificates of correction relating to other asserted errors. We note in passing the quite different claim language complainant EBC employed in its now-revoked corresponding European patent:

> 1. An alkaline electrochemical cell having a zinc-containing anode and an alkaline electrolyte, the cell containing no mercury added to the components of the cell, characterised in that the zinc of the anode is so selected that an anode gel which is made of 63g of the zinc, 36g of an alkaline electrolyte and a Carbomer binder, and which has been discharged for 161 minutes to 15% depth of discharge at 2.88A exhibits a specific relative volume expansion rate less than 25% after storing the anode gel at 71°C for 24 hours.

RX-4, GP-000307.

Further, such discharge contemplates using 63 grams of zinc (the amount of zinc used in the zinc anode gel mix of the test cell) and there is no dispute that no commercial alkaline cell employs 63 grams of zinc in its anode gel.

In their initial review brief, complainants continue to argue that "said zinc anode" means "the zinc which is the active component of anode of the claimed electrochemical cell," referring, *inter alia,* to the claim language "an anode gel comprised of zinc as the active anode component." Complainants' Review Brief ("C. Br.") 4-5. As noted above, this "construction" impermissibly ignores the word "anode" in the term "said zinc anode." However, assuming that the term "said zinc anode" can be treated this way, *i.e.,* as referring to zinc per se[11], such "construction" would introduce further ambiguity, as is clear from consideration of the remainder of the claim language, which provides that "said zinc anode" (or "said zinc" as hypothetically "construed" here) "has a gel

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[11] Complainants argue that to construe "said zinc anode" as "said zinc" is to construe it as referring to zinc powder, *i.e.,* zinc per se, and without regard to its being a component of the "anode gel." C. Br. 5. To the extent complainants may argue that the zinc must be considered in the context of being a component of the "anode gel " (as the active anode component of the anode gel), they would be adopting respondents' argument that "said zinc anode" refers to "anode gel." We note that to argue for two different constructions of "said zinc anode" (or to fail to settle on a single construction) would effectively admit indefiniteness.

expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A." Complainants' proposed claim construction would thus call for "said zinc" to be "discharged." However, the term "discharged" has no meaning with regard to zinc per se; it has meaning only with reference to the discharge of an electrochemical cell and, in this case, an electrochemical cell in which an anode gel (with zinc as its active anode component) serves as the anode.[12] Thus, accepting complainants' argument would only result in the claims being indefinite for another reason.

In sum, the language of the asserted claims cannot be reasonably construed. Based on the foregoing considerations, we therefore determine that the the asserted claims are invalid for indefiniteness. We do not reach the other issues in this case, including any other issues of claim

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[12] The ordinary meaning of the term "discharge" in the relevant art is "The converting of the chemical energy of a voltaic cell or battery into electrical energy." Webster's New International Dictionary (Unabridged), Second Edition (1958);Webster's Third International Dictionary (Unabridged) (1981). As used in the specification the term is used in just that sense to refer to the discharge of an electrochemical cell, specifically (1) the "electrochemical cell" of the claims (intended for consumers), which has for its anode an anode gel which includes zinc as its active anode component (2) the test cell, which has for its anode a zinc anode gel mix. As noted above, the term "discharged for 161 minutes to 15% depth of discharge at 2.88A," as used in the specification, refers only to the discharge of the test cell, with its zinc anode gel mix.

construction.[13] We deny as moot respondent Ningbo Baowang's May 21, 2004, motion to terminate the investigation as to it pursuant to Commission Rule 210.21(a)(1), as well as Ningbo Baowang's related motion to reopen the evidentiary record.

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[13] This includes the construction of the term "gel expansion." Complainants concede that prior to the effective filing date of the '709 patent, the term "gel expansion" had no ordinary meaning to one of ordinary skill in the art. C. Br. 10. The term is not used as such or expressly defined in the specification, but complainants equate it with SRVER and cite other language in the specification as referring to it. As noted above, there are ambiguities with respect to SRVER and the cited language. However, our disposition of this case does not require us to address these ambiguities and we therefore do not address what meaning, if any, may be ascribed to the term "gel expansion."

APPENDIX E – EXCERPTS FROM INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND RECOMMENDED DETERMINATION ON REMEDY AND BOND OF THE UNITED STATES INTERNATIONAL TRADE COMMISSION ISSUED ON JUNE 2, 2004, THE ENTIRETY OF WHICH MAY BE FOUND AT JA690-924 IN VOLUMES II AND III OF THE CONFIDENTIAL JOINT APPENDIX FOR THE UNDERLYING FEDERAL CIRCUIT CASE NO. 2007-1197

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
CERTAIN ZERO-MERCURY-ADDED ALKALINE BATTERIES, PARTS THEREOF, AND PRODUCTS CONTAINING SAME	)	**Inv. No. 337-TA-493 (Remand)**

INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND RECOMMENDED DETERMINATION ON REMEDY AND BOND

Administrative Law Judge Charles E. Bullock

(June 2, 2004)

Appendix E

Pursuant to the Notice of Investigation, 68 Fed. Reg. 32771 (June 2, 2003), and Rule 210.42(a) of the Rules of Practice and Procedure of the United States International Trade Commission, 19 C.F.R. § 210.42(a), this is the Administrative Law Judge's Initial Determination in the matter of certain zero-mercury-added alkaline batteries, parts thereof, and products containing same, Investigation No. 337-TA-493.

The Administrative Law Judge hereby determines that a violation of Section 337 of the Tariff Act of 1930, as amended, has been found in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain zero-mercury-added alkaline batteries, parts thereof, and products containing same in connection with claims 1 through 7 of U.S. Letters Patent No. 5,464,709. Furthermore, the Administrative Law Judge hereby determines that a domestic industry in the United States exists that practices U.S. Letters Patents Nos. 5,464,709.

* * *

C. Overview of the Technology

At issue in this investigation are zero-mercury-added alkaline batteries. Alkaline batteries are well known and widely used throughout the world. Alkaline batteries are not the only type of batteries that are manufactured. There are also carbon zinc

batteries, which are not at issue in this investigation. Although alkaline batteries are more expensive than carbon zinc batteries, they last longer, are capable of providing more power, and are more stable.[38]

Alkaline batteries use zinc as the active anode component.[39] For years, this zinc was amalgamated with mercury to minimize chemical reactions that would occur between the zinc and other components of the battery anode resulting in the generation of unacceptable quantities of hydrogen gas.[40] Those reactions, in the absence of mercury, would very often produce sufficient hydrogen, resulting in sufficient pressure, to cause the batteries to swell, leak, and coupled with a malfunctioning vent, explode.[41] More specifically, the addition of mercury to alkaline batteries serves to inhibit the production of hydrogen gas when the zinc is contacted by the aqueous electrolyte.[42] In the past, if mercury was not present, hydrogen gas would build up inside the cell and eventually the gas would create sufficient pressure to distort the dimensions of the cell and force the electrolyte out

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[38] *See* Amended Complaint ¶ 65 at 19.

[39] *See* Amended Complaint ¶ 66 at 19.

[40] *See* Amended Complaint ¶ 66 at 19.

[41] *See* Amended Complaint ¶ 66 at 19.

[42] Scarr, Tr. 331.

of the cell through pathways along the seam of the can or the seal, causing the cell to leak.[43]

Beginning in the early 1980s, mercury became an environmental concern and it became increasingly necessary to reduce the amount of mercury contained in batteries.[44] By the early 1990s, much of Europe and the United States prohibited the addition of any mercury to battery products.[45] The battery industry responded to these pressures by developing alternative additives and components which, by the late 1980s, permitted the amount of added mercury to be reduced from a starting high point of about 0.5% weight or about 5000 parts per million ("ppm") to approximately 250 ppm by weight of the battery.[46]

Commencing in about 1983, an effort was made at EBC to reduce the mercury content of the

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[43] Scarr, Tr. 331.

[44] *See* Amended Complaint ¶ 67 at 19-20; Scarr, Tr. 332-333.

[45] *See* The Mercury-Containing and Rechargeable Battery Management Act (Pub. L. 104-142; 42 U.S.C. § 14301 *et seq.*) (May 13, 1996).

[46] *See* Amended Complaint ¶ 68 at 20. 1% mercury equates to 1000 ppm. 0.15% mercury equates to 1500 ppm. Since the amount of zinc in the battery is about 1/6 of the total weight of the battery, one can divide the parts per million numbers by six and find the weight of mercury relative to the entire battery weight. In the case of .15%, that would be 250 ppm. Scarr, Tr. 368.

alkaline batteries which it was marketing and selling.[47] EBC was successful in gradually reducing the mercury content by reducing the opportunities for a gassing reaction to take place. Between 1983 and 1988, mercury additions were reduced from 6% to 3%, then to 1.5%, and ultimately to what was called "ultra low mercury" in which the mercury level was 0.15%, relative to the weight of the zinc in the anode.[48]

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[49] Dr. Robert F. Scarr was one of the people called upon to work on this project at EBC.[50] Dr. Scarr received a Ph.D. in chemistry from the University of Illinois in 1960 and immediately thereafter went to work for the Consumer Products Division at Union Carbide Corporation, which eventually became the Eveready Battery Company.[51] Dr. Scarr worked at EBC or its predecessor for 37 years, retiring in 1997, and spent his entire career at EBC working

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[47] Scarr, Tr. 331.

[48] Scarr, Tr. 332.

[49] Scarr, Tr. 340-341, 344-347, 412.

[50] Scarr, Tr. 333, 342.

[51] Scarr, Tr. 322-324.

with batteries of one sort or another.[52] He went to work in the Alkaline Group at EBC in 1982.[53]

[

]54 Shelf gassing is gassing that occurs before the cell has been discharged, *i.e.* while being stored at the retail outlet or in a warehouse or even in the customer's closet. It is the gassing which occurs at a low rate from the zinc inside the battery. This gassing can lead, if it continues long enough, to dimensional distortion of batteries and perhaps leakage.[55]

Post partial discharge gassing is gassing that occurs after the battery has been partially discharged, *i.e.* put into a product and turned on by the user. The gassing that occurs under these conditions can occur at a higher rate than the gassing that occurs on the shelf. Although certain additives and components were relatively successful in controlling shelf gassing, they were unsuccessful in controlling post partial discharge gassing.[56]

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[52] Scarr, Tr. 325.

[53] Scarr, Tr. 331.

[54] Scarr, Tr. 348-349.

[55] Scarr, Tr. 350.

[56] Scarr, Tr. 350.

Appendix E

The '709 patent discloses and claims this commercially feasible alkaline battery which has zero added mercury. The battery is manufactured using a zinc anode powder that would pass a specific gassing test. The use of this zinc powder, which is referred to as "low expansion zinc," enables construction of the battery without added mercury.

D. The Patent at Issue

The '709 patent is entitled "Alkaline Cells That are Substantially Free of Mercury" which was issued on November 7, 1995, based on an application (Application Serial No. 349,164) filed on December 2, 1994, that was a continuation of Application Serial No. 255,158, filed on June 7, 1994, which issued as U.S. Patent No. 5,395,714, which is a continuation of Application Serial No. 82,147, filed on June 24, 1993, which issued as U.S. Patent No. 5,364,715, which is a continuation of Application Serial No. 566,925, filed on August 14, 1990, which was abandoned.[66] The named inventor is Robert F. Scarr.[67] EBC is the owner of the '709 patent by assignment.[68] The '709 patent has a total of twelve claims.[69] Claims 8

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[66] *See* CX-1.

[67] *See* CX-1, CX-2.

[68] *See* CX-1.

[69] *See* CX-1.

through 12 have been disclaimed by EBC.[70] Of the remaining claims, one independent claim of the '709 patent, Claim 1, is at issue here.[71] Also at issue are dependent claims 2 through 7.[72]

E. The Products at Issue

1. Alkaline Batteries In General

The products at issue are zero-mercury-added alkaline batteries, which include both primary and rechargeable batteries. Batteries come in many shapes and sizes. Most of the alkaline batteries are cylindrically shaped, with various diameters and heights.[73] Prismatically shaped alkaline batteries are also available, such as 6-volt, 7.5-volt and 9-volt batteries, which are battery packs containing multiple cylindrical batteries, many of which are cylindrical button cells.[74] The external shapes and sizes of batteries are made to U.S. (American National Standards Institute ["ANSI"]) and International (International Electrotechnical Commission ["IEC"]) standards which carry the appropriate standard label.[75] The more popular

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[70] *See* Order No. 96 (January 28, 2004); RX-2766.

[71] *See* CX-1.

[72] *See* CX-1.

[73] *See* Amended Complaint ¶ 51 at 13.

[74] *See* Amended Complaint ¶ 51 at 13.

[75] *See* Amended Complaint ¶ 52 at 13.

battery sizes also have common names, including AAA, AA, C, D and 9V, which also have the following designations:

Size	Designation[76]	EBC Designation
AAA	LR3	E92
AA	LR6	E91
C	LR14	E93
D	LR20	E95
9-volt	6LR61	

Cylindrical alkaline batteries are produced with a high surface area zinc anode, a high-density manganese dioxide cathode and a potassium hydroxide electrolyte.[77] A cutaway of a typical cylindrical alkaline battery is illustrated in the following diagram:[78]

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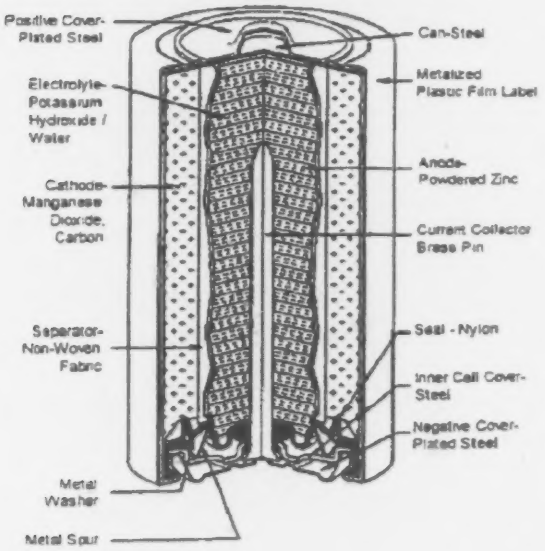
[76] Batteries that are made in accordance with the International Electrotechnical Commission (IEC) standards with the designation "LR" are electrochemical cells that contain an alkaline electrolyte, a cathode comprising manganese dioxide as the active component, and an anode comprised of zinc as the active anode component. O'Keefe, Tr. 1506-07, 1613-14; *see also* CX-727C.

[77] *See* Amended Complaint ¶ 52 at 13.

[78] CDX-14.

Appendix E

EVEREADY ENERGIZER ALKALINE "D" SIZE



Cathodes are a mixture of high purity electrolyte manganese dioxide and carbon conductor. Anodes are a gelled mixture of zinc powder and electrolyte. The zinc powder is manufactured specifically for the alkaline industry and is formulated with other ingredients to make the anode. Separators of specially selected materials provide electrochemical separation between the electrodes and prevent migration of any solid particles in the battery. The steel can confines active materials and serves as the cathode collector and the brass pin serves as the anode collector. Top and bottom covers provide contact surfaces of nickel-plated steel. A non-conductive plastic film label electronically insulates the battery and the molded nylon seal provides a safety venting mechanism.[79]

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[79] *See* Amended Complaint ¶ 54 at 14.

* * *

E. The Disputed Claims

Claim terms are to be given "their ordinary and accustomed meaning as understood by one of ordinary skill in the art."[217] There is no dispute among the parties that, on or about August 14, 1990, a person of ordinary skill in the art is a person with a bachelors degree in one of the sciences, including materials science, physics, chemistry, or chemical engineering, and at least two years of experience in the battery field.[218] As such, the disputed claims will be construed based on the above definition of one of ordinary skill in the art.

* * *

3. "Said Zinc Anode"

The main dispute among the parties is whether the term "said zinc anode" refers to the "anode" previously mentioned in the claim or to the "zinc as the active anode component." Complainants construe the term "said zinc anode" as referring to zinc powder, which may or may not be alloyed with other elements, used to prepare the anode gel of the electrochemical cell. CIB 59-60. The Staff agrees. SIB 23. Respondents construe "said zinc anode" as

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[217] *Bell Atlantic*, 262 F.3d at 1267-68.

[218] O'Keefe, Tr. 1494; Whittingham, Tr. 3986-3987; Newman, Tr. 4384.

referring to the anode of the electrochemical cell. RIB 53.

There is no dispute among the parties that the term "said" is a legal term that means "before mentioned."[241] There is also no dispute among the parties that the term "said zinc anode" lacks an antecedent basis in the claim. CRB 15; SIB 21; RIB 53. Specifically, the word "zinc" is referenced once previously in the claim as part of the phrase "***zinc*** as the active anode component." The word "anode" is referenced twice previously in the claim as part of the phrases "an ***anode*** gel comprised of" and "zinc as the active ***anode*** component." But the term "zinc anode" is never used previously in the claim. Because there is no antecedent basis for the term "said zinc anode," the term is not clear on its face. Therefore, one must look towards the other claims, specification, and prosecution history (i.e. intrinsic evidence) for clarification.[242] If the term is still not clear after looking at the intrinsic evidence, then it is necessary to turn to extrinsic evidence, such as expert and inventor testimony.[243] The undersigned has determined that the term "said zinc anode" can be determined using the intrinsic evidence in the record. Therefore, it is unnecessary to resort to extrinsic evidence in construing this claim,

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[241] *See* Black's Law Dictionary 1336 (6th ed. 1990).

[242] *Interactive Gift Express*, 256 F.3d at 1331.

[243] *Bell Atlantic*, 262 F.3d at 1268-69.

including the foreign prosecution history with the European Patent Office.[244]

Complainants admit that, because "said zinc anode" lacks any antecedent basis, there is ambiguity within the claim language as to what "said zinc anode" is referring. Complainants acknowledge that it even appears that "said zinc anode" is referring to the anode gel of the electrochemical cell. CIB 60. Complainants argue, however, that although there is an ambiguity, the remaining intrinsic evidence makes clear what "said zinc anode" is referring to. For instance, in the context of the claim and the entire patent, Complainants argue that gel expansion is a characteristic of the zinc powder, which is used as the active anode material.[245]

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[244] Respondents also rely on the prosecution history of the European counterpart to the '709 patent in support of its claim construction. The European prosecution history is clearly extrinsic evidence. *See Certain Sortation Systems,* Inv. No. 337-TA-460, Order No. 36 (June 3, 2002) (noting that the use of statements made to foreign patent offices in determining the scope of infringement under the doctrine of equivalents has been established by the Federal Circuit and that their use as extrinsic evidence for claim construction purposes is also well-recognized by trial courts, even though the Federal Circuit has not yet ruled on the issue).

[245] *See* CX-1, col. 4:12-14, 27-31 (Zinc is used as the active anode material in the cells of this invention. Preferably, the zinc is low expansion zinc, and is in powder form). The undersigned is in agreement, discussed *infra*, that gel expansion is a characteristic of zinc powder that is used as the active anode component and that the gel expansion test is a test for zinc powders with a particular gel expansion

Appendix E

Respondents argue that Complainants are attempting to have this tribunal rewrite Claim 1 of the '709 patent by interpreting "said zinc anode" to mean zinc powder. Respondents argue that *Chef America, Inc. v. Lamb-Weston, Inc.*[246] prohibits this. RIB 58. *Chef America* states that when a claim uses ordinary, simple English words whose meaning is clear and unquestionable, the proper construction is that they mean exactly what they say, even if this literal interpretation results in a nonsensical construction of the claim as a whole.

Respondent PT also argues that Claim 8 of the '709 patent, which refers to "said anode component" is relevant in interpreting the term "said zinc anode." PTIB 12-13. Complainants argue that the terms "said zinc anode" and "said anode component" are significantly different because it is clear that "said anode component" refers to the anode gel. CRB 16-17.

The prosecution history shows that, on May 22, 1995, the applicant made a deletion from claim 45. Claim 45 read as follows:

> An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode

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characteristic, which is made clear in the specification. CX-1, col. 4:12-22, 25-31.

[246] *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371 (Fed. Cir. 2004).

> component, and an anode gel comprised of zinc as the active anode component, wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell and said zinc anode gel has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.[247]

The May 22, 1995 amendment requested that:

> After "zinc anode" delete "gel."[248]

The applicant explained the correction as follows:

> Claims 45, 48 and 49 have been amended to correct a grammatical error. It is the zinc which is to be tested, as set forth in the specification."[249]

This amendment shows that the applicant clearly did not intend "said zinc anode" to refer to the zinc anode gel, and that his intention was that the "said zinc anode" refer to the zinc.

The sole issue in *Chef America* was the meaning of the term "heating the resulting batter-coated dough ***to*** a temperature in the range of about 400F

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[247] CX-607 at ITCEBC210085; RX-2 at GP-001300.

[248] CX-607 at ITCEBC210099; RX-2 at GP001370.

[249] CX-607 at ITCEBC210101; RX-2 at GP001372.

to 850F."[250] The question is whether the dough itself is to be heated ***to*** that temperature, or whether the claim only specifies the temperature ***at*** which the dough it to be heated. Taking the word "to" literally, results in burning the dough to a crisp, which was not the intended result. But, because the word "to" is an ordinary, simple English word whose meaning is clear and unquestionable, the Federal Circuit held that it would be impermissible for a court to redraft the claims in order for the patent to be operable and to make sense.[251] Although the Respondents are advocating that any clarification of the term "said zinc anode" to mean zinc powder would be paramount to rewriting the claims, which is impermissible when a term is clear on its face, it is clear that, in this instance, the term is not clear on its face. Therefore, *Chef America* is clearly distinguishable, because the parties are in agreement that "said zinc anode" lacks an antecedent basis in the claim, which makes the term unclear on its face.

The undersigned finds that interpreting "said zinc anode" in claim 1 as referring to the zinc as the active anode component is consistent with the other claims in the patent. "Said anode component" in Claim 8 has a proper antecedent basis in Claim 1, which clearly refers to the anode gel ("an anode gel

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[250] *Chef America*, 358 F.3d at 1371 (emphasis added).

[251] *Id.* at 1374.

comprised of zinc as the active ***anode component***"). This is clearly not the case with "said zinc anode," so there is no inconsistency in interpreting the two phrases differently.

Accordingly, the term "said zinc anode" is construed as referring to the zinc as the active anode component.

* * *

E. Is the '709 Patent Invalid for Indefinite Written Description under 35 U.S.C. § 112, ¶ 1

Respondents contend that the '709 patent fails to meet the written description requirement because the specification "does not disclose a correlation between the required function and the zinc composition," other than the correlation between the iron content in the zinc and gel expansion. RIB 198; RRB 142. In the Respondents' view, low expansion is a function rather than a characteristic of zinc. Respondents argue that the '709 patent fails the written description requirement because it does not give any description of the composition of the zinc that qualifies as low expansion and provides no guidance as to what zincs will pass or fail the gel expansion test. RIB 198-99. In addition, Respondents argue that once a zinc passes the gel expansion test, nothing is known about the composition of the zinc, and that the other methods,

such as ICP mass spectrometry, must be used to determine the zinc's composition, which is not discussed in the '709 patent. RIB 199. Both Complainants and the Staff disagree with Respondents' position. CIB166-67; CRB 93-96; SIB 81; SRB 31-34.

Respondents cite to *University of Rochester v. G.D. Searle & Co. Inc.*,[732] in support of their written description argument. RIB 199-200; RRB 142-44. Respondents contend that the '709 patent fails the written description requirement because it does not disclose the structural or physical properties of zincs required to practice the claimed method, except by trial and error. because the gel expansion test is essentially a "black box."[733] RIB 200.

In *University of Rochester,* the patent at issue claimed a method for inhibiting COX-2 activity in humans by administering a non-steroidal compound that selectively inhibits the activity of the COX-2 gene product.[734] The Federal Circuit held that, without identifying which compounds would pass the test, the patent could not be described, especially because chemical inventions require a precise definition, such as "by structure,

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[732] *University of Rochester v. G.D. Searle & Co.,* 249 F.Supp.2d 216,223 (W.D.N.Y. 2003), *aff'd,* 358 F.3d 916 (Fed. Cir. 2004).

[733] O'Keefe, Tr. 2343-44.

[734] *University of Rochester,* 358 F.3d at 918.

formula, chemical name, or physical properties" and not a mere wish or plan for obtaining the claimed chemical invention.[735] The District Court noted that the "claimed invention is more theoretical than real; it is, as defendants argue, akin to 'inventing' a cure for cancer by utilizing a substance that attacks and destroys cancer cells while leaking healthy cells alone. Without possession of such a substance, such a 'cure' is illusory, and there is no meaningful possession of the method."[736] In *University of Rochester,* the patent failed because the physical properties of compounds required to practice the claimed element were not disclosed. As noted above, the gel expansion test is a physical characteristic of the zinc, not a function of it. The '709 patent fulfils the requirements of *University of Rochester* because it discloses a key physical characteristic of the zinc-the gel expansion-that is required to practice the claimed invention. In addition, the '709 patent also discloses how to determine the gel expansion characteristic of zinc, i.e. by performing the gel expansion test. And, the '709 patent also discloses the existence of zincs that satisfy the gel expansion characteristic claimed in the patent via Examples 1 and 2.

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[735] *Id.* at 927.

[736] *University of Rochester,* 249 F.Supp.2d at 228.

Accordingly, Claim 1 of the '709 patent is not invalid for failure to satisfy the written description requirement under 35 U.S.C. § 112, ¶ 1.

* * *

I. Is the '709 Patent Invalid for Indefiniteness under 35 U.S.C. § 112, ¶ 2

Respondents contend that the '709 patent is indefinite because the patent does not contain "clear and distinct bounds" of what gel expansion means, specifically pointing to the ambiguity of the term "said zinc anode." RIB 221. Respondents also contend that the '709 patent is indefinite because it is not clear whether certain corrosion inhibitors, specifically indium, should be included in the gel expansion test. RIB 222-23. Finally, Respondents contend that the '709 patent is indefinite because it does not define various factors that may affect a zinc's gel expansion characteristic, i.e. intra-lot variability, potassium hydroxide concentration; zinc oxide concentration and choice of a gelling agent. RIB 223. Both Complainants and the Staff disagree. CIB 171-72; CRB 103-04; SIB 92-93; SRB 45-47.

The fact that a term is susceptible to more than one interpretation does not render the claim indefinite.[759] As previously discussed in the claim

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[759] *Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1344 (Fed. Cir. 1998).

construction section, there was some ambiguity regarding the term "said zinc anode." The undersigned has construed the term "said zinc anode" to refer to the zinc as the active anode component. When "said zinc anode" is interpreted in this manner, the terms of Claim 1 are distinct.

Respondents acknowledge that the potassium hydroxide concentration, zinc oxide concentration and choice of a gelling agent are standardized in the specification. Therefore, Respondents' argument that the '709 patent is indefinite because it does not explain what effect changing these variables has on the gel expansion test is rejected.

Accordingly, Claim 1 of the '709 patent is not invalid for indefiniteness under 35 U.S.C. § 112, ¶ 2.

APPENDIX F – ORDER OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DENYING APPELLANTS' PETITION FOR PANEL REHEARING AND REHEARING *EN BANC* ISSUED AUGUST 1, 2008

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

2007-1197

ENERGIZER HOLDINGS, INC.
and EVEREADY BATTERY COMPANY, INC.,

Appellants,

INTERNATIONAL TRADE COMMISSION,

Appellee.

and

GOLDEN POWER INDUSTRIES, LTD., GUANGDONG CHAOAN ZHENGLONG ENTERPRISE CO., LTD., GUANGZHOU TIGER HEAD BATTERY GROUP CO., LTD., FUJIAN NANPING NANFU BATTERY CO., LTD., HI-WATT BATTERY INDUSTRY CO., LTD., NINGBO BAOWANG BATTERY CO., LTD., SICHUAN CHANGHONG ELECTRIC CO., LTD., and ZHONGYIN (NINGBO) BATTERY CO., LTD.,

Intervenors.

Appendix F

On appeal from the United States International Trade Commission in Investigation No. 337-TA-493.

ORDER

NOTE: This order is nonprecedential.

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

ORDER

A combined petition for panel rehearing and for rehearing en banc having been filed by the Appellants, and a response thereto having been invited by the court and filed by the Appellee,* and the petition for rehearing and response, having been referred to the panel that heard the appeal, and thereafter the petition for rehearing en banc and response having been referred to the circuit judges who are in regular active service,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for panel rehearing be, and the same hereby is, DENIED and it is further

ORDERED that the petition for rehearing en banc be, and the same hereby is, DENIED.

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* A response was also filed by the Intervenors, Golden Power Industries, Ltd., et al.

Appendix F

The mandate of the court will issue on August 8, 2008.

APPENDIX G – 35 U.S.C. § 112

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.

Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple

dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

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Supreme Court, U.S.
FILED

08-583 OCT 30 2008

OFFICE OF THE CLERK

No. 08-

IN THE

Supreme Court of the United States

ENERGIZER HOLDINGS, INC. AND
EVEREADY BATTERY COMPANY, INC., PETITIONERS,

v.

UNITED STATES INTERNATIONAL
TRADE COMMISSION, ET AL.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

SUPPLEMENTAL APPENDIX TO PETITION FOR WRIT OF CERTIORARI

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October 30, 2008

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SA1

US005464709A

United States Patent [19]

Getz et al.

[11] Patent Number: 5,464,709

[45] Date of Patent: Nov. 7, 1995

[54] **ALKALINE CELLS THAT ARE SUBSTANTIALLY FREE OF MERCURY**

[75] Inventors: **Dale R. Getz**, North Ridgeville; **John C. Nardi**, Brunswick; **Robert F. Scarr**, Westlake, all of Ohio

[73] Assignee: **Eveready Battery Company, Inc.**, St. Louis, Mo.

[21] Appl. No.: **349,164**

[22] Filed: **Dec. 2, 1994**

Related U.S. Application Data

[63] Continuation of Ser. No. 255,158, Jun. 7, 1994, Pat. No. 5,395,714, which is a continuation of Ser. No. 82,147, Jun. 25, 1993, Pat. No. 5,364,715, which is a continuation of Ser. No. 566,925, Aug. 14, 1990, abandoned.

[51] **Int. Cl.**[6] **G03C 3/00**

[52] **U.S. Cl.** **429/229**; 429/206; 429/224; 429/230

[58] **Field of Search** 429/206, 224, 429/229, 230

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Primary Examiner—Deborah Jones

Attorney, Agent, or Firm—Robert W. Welsh; Richard C. Cooper

[57] **ABSTRACT**

Alkaline cells are substantially free of mercury, and employ a zinc anode gel, which gel has a which expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.

12 Claims, 2 Drawing Sheets

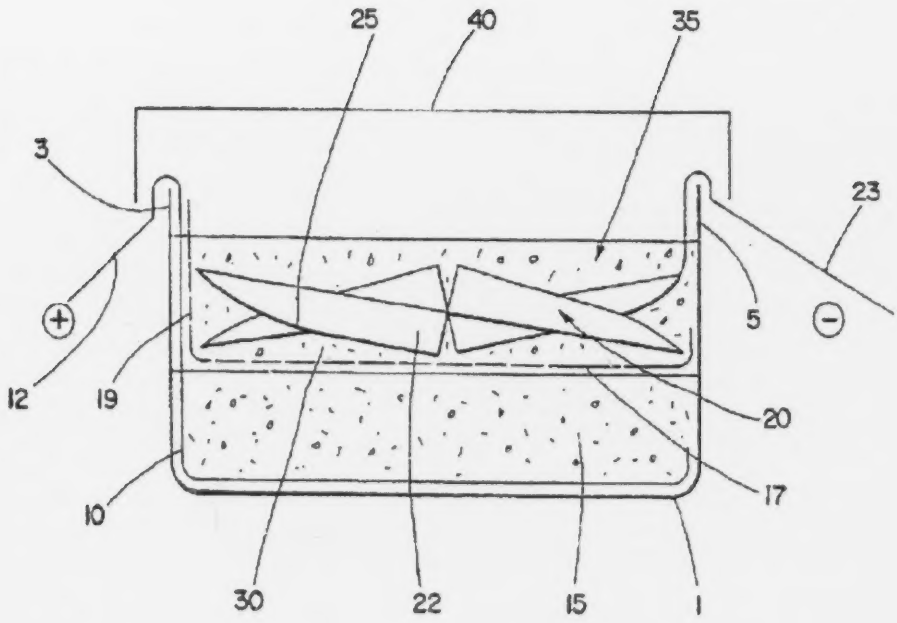

Fig. 1

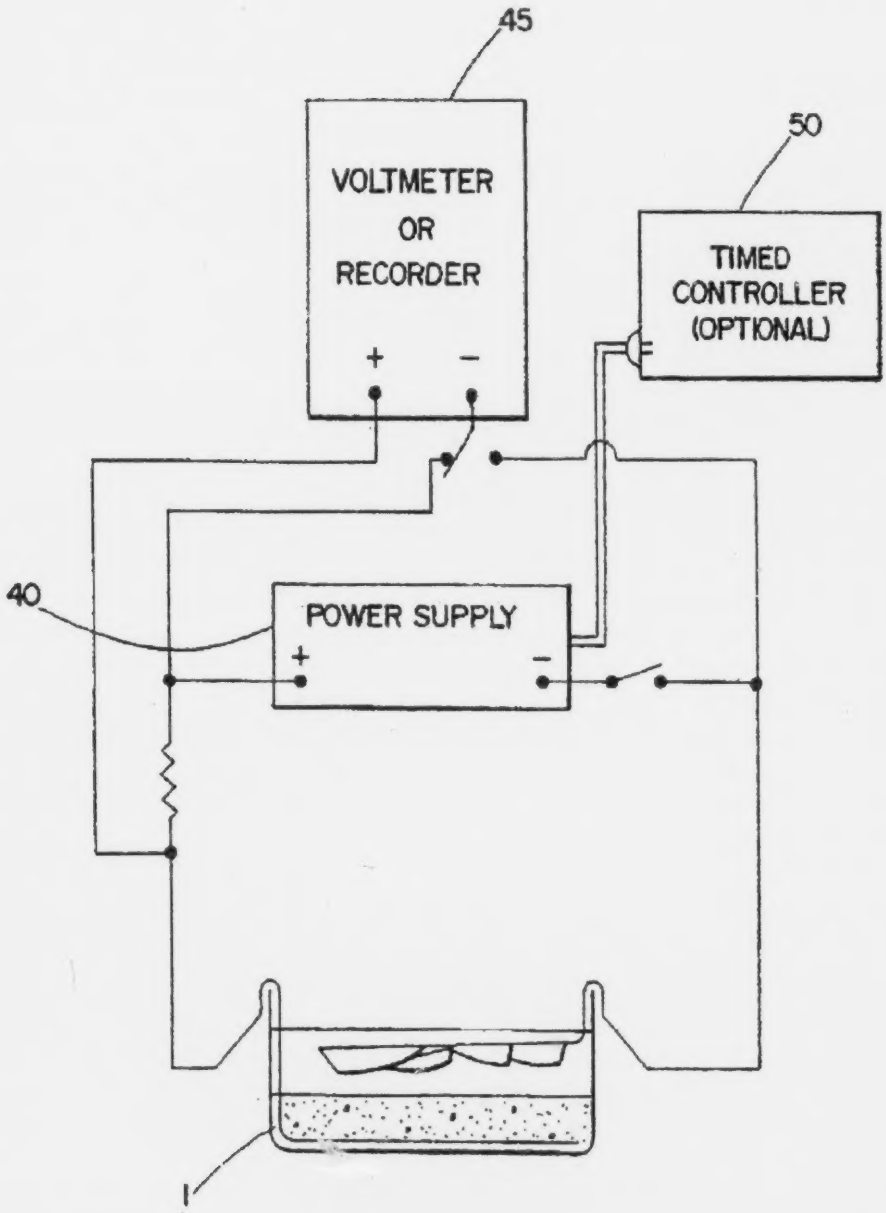
45
VOLTMETER
OR
RECORDER
+
−
50
TIMED
CONTROLLER
(OPTIONAL)
40
POWER SUPPLY
+
−
1

Fig. 2

ALKALINE CELLS THAT ARE SUBSTANTIALLY FREE OF MERCURY

This is a continuation of application Se. No. 08/255,158, filed Jun. 7, 1994, now U.S. Pat. No. 5,395,714, which is a continuation of application Ser. No. 08/082,147, filed Jun. 25, 1993, now patented under U.S. Pat. No. 5,364,715, which is a continuation of abandoned application Ser. No. 07/566,925, filed Aug. 14, 1990.

FIELD OF THE INVENTION

This invention relates to alkaline electrochemical cells that are substantially free of mercury.

BACKGROUND OF THE INVENTION

Alkaline electrochemical cells typically contain an alkaline electrolyte, such as potassium hydroxide (KOH), a cathode comprised of a metal oxide such as manganese dioxide, (MnO_2), and a zinc anode. These cells provide excellent performance and are used throughout the world in many consumer applications.

A detrimental characteristic of these cells is the formation of hydrogen gas. This gas can be formed by undesirable corrosion of the zinc. As the quantity of gas increases, the internal pressure in the cell also increases. If this pressure increase is not relieved, the cells can eventually leak.

A widely used solution to the corrosion of the zinc is the addition of mercury to the anode as a corrosion inhibitor. Mercury effectively inhibits the corrosion of zinc and the formation of gas, and thus enhances the performance of the electrochemical cell. Unfortunately, as is well known, mercury may add to environmental pollution.

To address this environmental concern, the amount of mercury used in the cell has been lowered by adding zinc corrosion inhibitors to the cell. Examples of these inhibitors include lead, indium, cadmium, thallium, gold, silver, tin, gallium and compounds that incorporate these elements. These inhibitors have been alloyed with the zinc, deposited on the zinc, included in the electrolyte and deposited on the collector. Organic inhibitors, such as polyethylene glycol, have also been tried. These methods have led to the commercialization of low mercury content batteries, called "Ultra-low Mercury," that have about 250 parts of mercury per million parts based on total battery weight.

Unfortunately, the inhibitor methods employed to not reliably permit the total removal of mercury from the cell. For example, indium is an effective inhibitor at certain levels of mercury, but surprisingly, at lower levels of mercury, indium is not as effective. Also, indium does not function well as an inhibitor for undischarged cells. The organic inhibitors are effective for cells that are undischarged and stored, but they do not inhibit gassing for cells that are partially discharged and then stored.

In view of these disadvantages, an alkaline electrochemical cell that is substantially free of mercury has not been commercialized. Moreover, considering the environmental concerns, such a cell is still desired.

SUMMARY OF THE INVENTION

This invention is an electrochemical cell that is substantially free of mercury. The cell comprises an alkaline electrolyte, a cathode comprising a metal oxide as the active cathode component, and an anode comprised of zinc as the active anode component. The cell components are arranged in a sealed container in a manner effective to provide electrochemical energy. The cells do not exhibit leakage of the cell components after being partially discharged via an electrical resistor to about 1.2 volts, and then stored under storage conditions of 21° C. for ninety day.

In another aspect, this invention is an electrochemical cell that has less than two parts of mercury based on one million parts by weight of the cell. The cell is comprised of potassium hydroxide electrolyte solution; a cathode comprising electrolytic manganese dioxide and synthetic graphite; an anode gel comprising low expansion zinc, between about 0.01 mg to about 1 mg per gram of zinc of indium hydroxide, and between about 0.001 mg to about 0.1 mg per gram of zinc of methoxylated polyethylene oxide having an average molecular weight ranging from about 300 to about 700. The cell further employs a bumished brass anode current collector. The cell components are arranged in a sealed container in a manner effective to provide electrochemical energy, and such that the cell has a void volume of between about 6% and about 12% of the cell's internal volume.

In yet another aspect, this invention is an electrochemical cell that is substantially free of mercury. The cell comprises an alkaline electrolyte, a cathode and an anode arranged in a sealed container in a manner effective to provide electrochemical energy, wherein the anode is comprised of low expansion zinc as the active anode material.

In still yet another aspect, this invention is an electrochemical cell that is substantially free of mercury. The cell comprises an alkaline electrolyte, a cathode and an anode arranged in a sealed container in a manner effective to provide electrochemical energy, wherein the anode is a gel comprised of zinc as the active anode material, an indium-containing compound and an ethylene oxide polymer.

The alkaline electrochemical cells of this invention are substantially free of mercury. The cells do not leak under conditions of normal use and storage, and provide an effective amount of electrochemical energy to be useful as batteries.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a cell diagram used in measuring the expansion of a zinc anode gel mix.

FIG. 2 shows a wiring diagram used in discharging a zinc anode gel mix.

DETAILED DESCRIPTION OF THIS INVENTION

The electrochemical cells of this invention are substantially free of mercury. By "substantially free of mercury" is meant that the total amount of mercury present in all the components of the cell in an amount which does not result in a harmful amount of environment pollution when it is disposed of. Typically, the cells of this invention have less than 50 parts of mercury per million parts by total weight of the cell. Preferably, the mercury is present at less than 25 parts per million. More preferably, there is zero-added mercury to the cell. By "zero-added" is meant that no mercury is added to any of the cell components. Typically, the residual amount of mercury can be present in many natural products. Thus, for the preferred zero-added mercury cells of this invention the only amount of mercury present in the cell is the residual amount that is naturally present in the cell components. Thus, when the cells are disposed of, no amount of mercury is added to the environment that is

greater than the amount that was present before the cell was assembled. For example, commercially available "pure zinc" can contain about 20 parts of mercury per billion parts of weight of zinc, and often contains much less than 20 parts per billion. For the zero-added mercury cells of this invention, the amount of mercury present will preferably be less than the level that can be detected analytically. Typically, the amount is less than 10 parts per million by total weight of the cell, preferably less than 5 parts per million, more preferably less than 2 parts per million, and most preferably less than 1 part per million.

The electrochemical cells of this invention comprise an alkaline electrolyte, a cathode and an anode arranged in a sealed container in a manner effective to provide electrochemical energy, i.e. when the cell is placed in a circuit, electrochemical energy is provided to the circuit. The cells have terminals of opposite polarity. One terminal is in contact with the cathode and the other is in contact with the anode. The cell is sealed in a manner effective to contain the cell components in the container under conditions of transport and use. The cell construction can include a cupped metallic can, suitably constructed of steel, nickel or other metal and can be nickel plated in whole or in part. A tubular cathode containing the active cathode material and conductor can be lined on the inner surface of the can, and a separator suitably made of a non-woven cellulosic or polymer fiber can be lined on the inner surface of the tubular cathode. In this construction, the can is in contact with the cathode and thus is the cathode terminal.

An anode made of a mixture of active anode material, electrolyte, optionally an electrolyte-swellable binder such as a polyacrylic acid can be enclosed within the separator. An anode current collector, such as in the form of a pin, is inserted into the anode. The cell is closed with a cover and sealed. The cover is in contact with the anode current collector and is the anode terminal of the cell.

Any conventional seal can be employed. It is desired that the cell construction not have a venting means that would vent due to the normal pressure generated in the cell during a normal discharge.

The electrolyte used in this invention is an aqueous alkaline solution, such as potassium hydroxide or sodium hydroxide. The concentration of the solution is any concentration that provides for ionic conductivity. Typically, in the assembled cell the concentration preferably ranges from about 30% to about 40%.

The cathode used in this invention is comprised of a metal oxide as the active cathode component. Examples include manganese dioxide and silver oxide. Preferred is maganese dioxide, and more preferred is electrolytic manganese dioxide (EMD). EMD, a widely available commercial product, is prepared by plating manganese dioxide from a manganese sulphate plating solution onto an electrode. The deposited manganese dioxide is subsequently removed form the electrode and recovered. One source is the TOSOH Corporation a Japanese company.

In addition to the metal oxide, the cathode further comprises a compound that is ionically conductive. This compound is called a conductor. Of the many types of known conductors, synthetic graphite is preferably used in the cells of this invention. Synthetic graphite is readily commercially available. One source is Lonza LTD, a Swiss company.

The cathode can further comprise a binder. Examples of suitable binders include polytetrafluoroethylene and polyethylene.

The cathode comprise a major amount of the metal oxide, a conductive amount of the graphite and often an effective amount of binder. Typically, the metal oxide will comprise between about 80 to about 85 weight percent of the total cathode weight. When a binder is employed, the binder will comprise less than about 0.5% by weight. The remainder of the cathode will be electrolyte solution is sufficient to wet the dry components, and to provide a mixture that can be molded. The cathodes are prepared by mixing the components together and dispensing the mix into the container. The mix is then molded or compressed against the inside of the container.

Zinc is used as the active anode material in the cells of this invention. Preferably, the zinc is low expansion zinc, and is in powder form. The powdered zinc is combined with a binder, optional components, and an amount of the electrolyte solution to form a gel. Typically, the anode gel expands when it is discharged and then stored.

The expansion rate due to gassing of fresh or discharged mixes of gelled zinc powder can be measured by the change in volume of the mix after being stored at expansion conditions. These conditions are, for example, storing for 24 hours at 71° C. The expansion behavior of zinc is dependent on rate and current density. These conditions in turn depend on the amount of the anode mix and the dimensions and geometry of the cell. The term "low expansion" is a relative term, and is determined by comparing the amount of expansion of different types of zinc anode gel mixes. Generally, the zinc used to prepare the anode gel that expands the least will provide a lower gassing cell, and, thus, in this invention, "low expansion zinc" means zinc that expands to a lower degree relative to other zincs. The degree of expansion of zinc anode gels can be measured by preparing an anode gel, assembling a cell and discharging the cell. An amount of the gel is then removed from the cell, placed in a container and stored. After storing, the amount of expansion is measured and compared to the amount of expansion of undischarged gel that is stored under the same conditions.

For the cells of this invention, the expansion rate of the anode gel is measured according to the following procedure. An anode mix is made of 63 weight percent zinc powder, 0.5 weight percent binder (Carbopol™940 is a suitable example), and 36.5 weight percent of aqueous potassium hydroxide electrolyte (37% aqueous solution) that contains 42.5 gm of zinc oxide per liter. The zinc oxide acts as the cathode depolarizer in this measurement cell. Referring to FIG. 1, an anode collector **10** in the form of a disk with a tap **12** is made from 33 ga cartridge brass sheet placed inside a flat bottomed 500 ml polypropylene beaker that is cut off at about the 250 ml level, thus providing a cell cup **1**. The current collector is clipped to a tab **3** on the cup. One hundred grams of the anode mix **15** is added into the cup **1** on top of the anode current collector **10**. A disk of separator paper **17** having the same diameter as the cup **1** diameter is placed on top of the anode mix **15**. A strip of separator paper **19** is placed on the wall of the cup **1** to shield the anode collector tab **12** from the cathode collector **20**. The cathode collector **20** is a piece of 0.011 inch thick Type "K" zinc sheet, and is cut in a 3 inch disk **22** with a 0.5 inch by 1.5 inch tab **23**. The disk **22** contains openings **25** that permit escape of hydrogen gas during discharge. This cathode collector **22** is clipped to a tab **5** on the rim of the cup opposite from the tab **3** holding the anode collector **12**. Space **10** is left between the separator **17** and the cathode collector **22** to allow for zinc deposit buildup during discharge. Enough electrolyte **35** is added to the cup **1** to cover the cathode collector **22**, and a piece of plastic film **40** such as SARAN™ wrap is placed loosely over the cell.

Referring now to FIG. 2, the cell is connected to a 10 A, 20 V D.C. power supply 40. The cell is discharged to 15% depth of discharge at 2.88 A for 161 minutes as recorded by the timer 50. The voltage across a 1 ohm resistor is maintained at 2.88 V. The cell voltage is recorded by recorder 45 at the beginning and end of discharge. The cell voltage should be approximately 0.7 to 1.2 V. A low voltage can indicate a short in the cell. If a short develops, the cell should be disconnected, and any cathode deposits or dendrites should be removed. The cell can then be reconnected, and the test continued.

After the discharge is completed, a portion of the anode mix is measured to the six milliliter level into four polypropylene graduated cylinders that have a capacity of ten milliliters. The cylinders should contain about 17 grams of anode mix. The same amount of fresh undischarged anode mix should be measured into four other ten milliliter graduated cylinders. About 1 milliliter of low density, high vapor pressure oil, such as pump oil, that is insoluble in and inert to the electrolyte is added on top of the mix in each cylinder. The mix level and oil level is recorded, and the density of the mix can be calculated. It is approximately 2.7 ±0.15 g/cc.

The cylinders are placed in an oven preheated to 71° C., and are kept there at that temperature for twenty-four hours. The cylinders are then removed and cooled for about one half hour.

The mix and oil levels are then read. The specific expansion rate of the mix (SER) is calculated from the formula:

$$SER = \frac{\text{Volume of expansion of mix (ml)}}{\left(\begin{array}{c}\text{Weight of anode in mix}\\ \text{in cylinder (g)}\end{array}\right) \times \left(\begin{array}{c}\text{Fraction of Zn}\\ \text{in the mix}\end{array}\right)}$$

The relative volume expansion rate (SRVER) can also be measured and calculated from the formula:

$$SRVER = \frac{\text{Volume of expansion of mix (ml)}}{\text{Original Volume of mix (ml)}} \times 100$$

The low expansion zinc useful in the cells of this invention typically exhibit a SRVER of less than 40%, preferably less than 25%, more preferably less than 20%, and more preferably less than 15%.

Another parameter that has been found to be useful in identifying zinc for cells of this invention is the amount of iron in the zinc. Advantageously, the zinc has less than 10 parts of iron per million parts by weight of zinc. Preferably, the zinc contains less than 5 ppm of iron. More preferred is zinc that contains less than 3 ppm of iron.

The cells of this invention employ additives that inhibit the corrosion of zinc. One beneficial component to be added to the cell to inhibit the corrosion of zinc is an ethylene oxide polymer and derivatives thereof. The ethylene oxide polymers are comprised of ethylene oxide moieties and can be substituted with organic and inorganic moieties. Suitable polymers include phosphate esters of ethylene oxide polymers, such as those disclosed in U.S. Pat. No. 4,195,120; perfluorated organic compounds of the ethoxylated fluoroalchol type, such as those disclosed in U.S. Pat. No. 4,606,984; and alkyl and polyethoxylalcohol sulfides, such as those disclosed in U.S. Pat. No. 4,781,999, all herein incorporated by reference. Preferred polymers for use in this invention are di- and triethylene glycol, the polyethylene glycols having an average molecular weight range of about 190 to about 7000, and their mono- and diethers and esters. Suitable ethers and esters of polyethylene glycols are the C_4 and lower alkyl ethers and C_4 and lower alkanoate esters. Examples of ether derivatives include methoxy diethylene glycol and the methoxy and ethoxy polyethylene glycols. Examples of ester derivatives include polyethylene glycol acetate.

The preferred ethylene oxide polymers are the polyethylene glycols and methoxy polyethylene glycols having molecular weights averaging from about 300 to 700.

The ethylene oxide polymers can be used singly or in combination. They are generally soluble in water, and can be added as a water solution to the cell. The ethylene oxide polymer can be added directly to the zinc during the production of the anode gel. Alternatively and additionally, the polymer additive can be included in water that is employed to pre-wet the separator in order to facilitate the wetting of the separator by the electrolyte. The polymer can then migrate to the zinc surface as the cell comes to equilibrium.

The ethylene oxide polymer is employed in the cell in an amount sufficient to inhibit the corrosion reaction between the zinc and the alkaline electrolyte. In general, beneficial effects are obtained with proportions of ethylene oxide polymer in excess of about 0.001 mg per gram of zinc, and preferably of about 0.01 mg per gram of zinc. Much larger proportions than these can be employed. For instance, amounts as large as 0.1 mg per gram of zinc have been employed and the beneficial effects obtained. However, amounts of the ethylene oxide polymer greater than about 0.1 mg per gram of zinc are generally considered to be in excess.

Another component useful to inhibit zinc corrosion is an indium-containing compound. Suitable compounds include indium hydroxide, indium oxide, indium metal and the like. Preferably, the compounds are soluble in the electrolyte solution, and, thus, indium hydroxide is preferred. The amount of indium employed is an amount sufficient to inhibit the corrosion reaction between the zinc and alkaline electrolyte. This amount is preferably between about 0.001 and about 1 mg per gram of zinc and more preferably, between about 0.05 and about 0.2 mg per gram of zinc.

The indium-containing compound is added in any manner that will enable it to become associated with the zinc. Preferably it is added directly into the anode mix. Additionally, the indium-containing compound can be added to the electrolyte solution.

The anode is prepared by mixing the zinc powder, ethylene oxide polymer, optional binder and an amount of electrolyte effective to form a paste or gel. Advantageously, the indium-containing compound is also added. This paste or gel can then be injected into the container.

A burnished brass anode current collector is preferably employed in the cells of this invention. This is inserted into the anode mix and is in contact with a terminal of the cell. By "burnishing" is meant that the surface of the collector is cleaned of surface oxides and residual contaminants. A clean shiny surface results. This can be accomplished by many means, for example, tumbling with ceramic balls. A preferred method is tumbling in the presence of a coating material that prevents oxidation of the burnished surface. Preferred coating materials are organic surfactants. A highly preferred example is polypropylene glycol.

The typical brass anode current collector has a composition of about 65% to 70% copper and about 30% to 35% zinc. The preferred anode current collectors is made of a conductive alloy containing a discontinuous dispersion of a minor amount of lead. An example of such an alloy is a

copper-zinc-lead alloy. The amount of lead dispersed in the anode current collector made of a copper-zinc-lead alloy should be preferably at least 200 parts per million based on the weight of the alloy of the current collector.

In a copper-zinc-lead alloy current collector, the copper is required to provide adequate conductivity for the current collector while the zinc will be compatible with the zinc anode. Preferably, the copper should comprise at least 50 weight percent of the copper-zinc-lead alloy with the remainder substantially zinc and a minor amount of lead. A suitable copper-zinc-lead alloy for use as the anode current collector would be copper alloy C3300 containing from 65 to 68 weight percent copper, 0.25 to 0.7 weight percent lead, and the remainder zinc. It is advantageous that the brass current collector be free of iron and nickel. Other suitable brass alloys used as current collectors are known as C26000 and C27000.

In addition to a copper-zinc-lead alloy, any conductive material compatible with the electrochemical system of the cell could be used as the alloy material of the anode current collector. Thus, the anode current collector could be a conductive alloy composed of copper, zinc or brass containing a dispersion of lead throughout the alloy. A minor amount of cadmium in the anode current collector can also contribute to reducing gassing. The cadmium can be dispersed along with the lead throughout the anode current collector. The cadmium could be added in amount of at least 1000 parts per million based on the weight of the anode current collector. Preferably, the dispersed cadmium should be from 1500 parts per million to 2000 parts per million.

It is advantageous that space be left in the cell to accommodate any gas that is formed. This space, or void volume, will vary according to the cell size and amount of zinc employed. The larger the cell, generally, the larger the void volume. Typically, the cells of this invention have a void volume of 6% to 12% of the cell's internal volume.

The substantially mercury-free, non-leaking cells of this invention can be obtained in different ways with different combinations of the components. A preferred combination is the use of the electrolytic manganese dioxide, synthetic graphite, low-iron or low expansion zinc, ethylene oxide polymer, indium-containing compound and burnished brass current collector. A slightly less preferred combination includes the same components except for the indium-containing compound. Consistently good results are obtained with different variations in type of zinc, anode collector, etc. when used in combination with both the ethylene oxide polymer and indium-containing compound.

The electrochemical cells of this invention will typically have an initial voltage of about 1.58 as determined by the difference in potential between the zinc and the cathode. The cells exhibit no leakage of the cell components after discharging the cells through an electrical resistor to 1.2 volts, and after being stored at 21° C. for ninety days. Preferably, the cells of this invention exhibit no leakage after being discharged to 0.8 volts and then stored for the stated period. The cells can also exhibit no leakage after being discharged through an electrical resistor to 1.2 volts and then stored at 45° C. for thirty days, and preferably, after being discharged to 0.8 volts and so stored. More preferably, the cells exhibit no leakage when discharged through an electrical resistor to 1.2 volts, and then stored at 71° C. for three days, and most preferably, after being discharged to 0.8 volts and so stored. Most preferably, the cells exhibit no leakage when discharged through an electrical resistor to 1.2 volts, and then stored at 71° C. for seven days and preferably, after being discharged to 0.8 volts and so stored.

These discharge and storage conditions are representative of the actual use made of the cells or batteries. For example, the batteries can be used in a device, such as a radio. However, the battery is typically not fully discharged. The device and battery may then be put aside for a period before they are used again. The cells of this invention exhibit no leakage when conventionally used and so stored.

The value of the electrical resistance can vary according to cell size. Typically, the cells of this invention will exhibit no leakage when discharged through an electrical circuit that has an electrical resistance value of 20 ohms or less depending on cell size. For example, a conventional D-size cell or battery (2.406 inches high by 1.344 inches diameter) can be discharged to 1.2 volts though a 2.2 ohm resistor and stored without showing leakage. A C-size (1.969 inches high by 1.031 inches diameter) or AA-size (1.988 inches high by 0.563 inch diameter) cell or battery can be discharged through a 3.9 ohm resistor to 1.2 volts and stored without showing leakage. A AAA-size cell or battery (1.745 inches high by 0.41 inch diameter) can be discharged through a 5 ohm resistor to 1.2 volts and then stored without showing leakage. A AAAA-size cell or battery (1.648 inches high by 0.310 inch diameter) can be discharge through a 20 ohm resistor to 1.2 volts and then stored without showing leakage.

Under normal discharge conditions, hydrogen gas is formed and will cause the cells to bulge. If the cells bulge too much, they will leak. The actual amount of bulge that causes leakage will vary according to cell size. For C-size cells, a bulge of greater than 40 mils will often cause leakage. The cells of this invention, regardless of size, exhibit a degree of bulge less than the amount that will typically cause leakage of the cell components.

By "leakage" of the cell components is meant that there is no leakage of the components attributable to undesirable gas formation. It is always possible to have leakage due to poor cell construction such as improper sealing of the cell. This improper and poor performing construction conditions are known. Also, "leakage" as used in this specification is different from creepage of the electrolyte. By nature, aqueous alkaline electrolyte solutions creep along the surface of metals. The amount of creepage in a normally constructed cell is small, and is not equivalent to the type of leakage of the components that occurs when an undesirable amount of gas is formed.

The cells of this invention also exhibit an effective amount of performance. For example, C-size cells made according to the claimed invention and which contains 23.4 g of MnO_2 and 9.1 g of Zn provided 45 to 50 hours of usable service when discharged through a 10 ohm resistor for four hours per day.

The following example is provided to illustrate the concept of the invention. The example does not limit the scope of the invention.

EXAMPLES

Example 1

Several C-size cells are constructed, discharged and stored at different temperatures for different periods. The cells have no mercury added to them, and use pure zinc as the active anode material, electrolytic manganese dioxide as the active cathode material and potassium hydroxide as the electrolyte. The anode contains 0.01 mg methoxylated poly-

ethylene oxide known as Carbowax™ 550 per gram of zinc and 0.02 mg of indium hydroxide per gram of zinc. The zinc is 6.2% SRVER expansion zinc, and contains 5.1 ppm of iron. The anode formulation is:

Component	Weight %
Zinc	63%
KOH	36%
Carbopol™ C940 (Binder)	0.6%
Carbowax™ 550	0.01 mg per gm of zinc
Indium Hydroxide	0.02 mg per gm of zinc

Trace amounts of zinc oxide and sodium silicate are added to yield 100 weight percent. These are used for their conventional purposes. The total anode weight is 14.43 grams and the amount of zinc in the anode is 9.1 grams.

Component	Weight Percent
MnO_2 (electrolytic)	80%
Synthetic Graphite	10.5%
Polytetrafluoroethylene (Binder)	0.3%
KOH	9.2%
	100.0%

The total cathode weight is 29.2 grams and the amount of manganese dioxide is 23.4 grams.

Additional potassium hydroxide in the form of a 45% solution in water is added to the cell to provide a total electrolyte weight of 11.53 grams, of which 4.2 grams is potassium hydroxide. The total volume of the anode, cathode and electrolyte is 16.6 cc's, and the void volume is between about 10% to 12% of the cell's internal volume. The components are placed in a nickel-plated steel container, a burnished brass anode current collector is used, and the cell is sealed.

Ten cells are discharged through a 3.9 ohm resistor for about four hours to approximately 1.2 volts. The cells are then stored at 21° C. for ninety days. None of the cells exhibit leakage of the components. The average bulge is 8 mils, the maximum is 24 mils, the minimum is 0 and the standard deviation of the sample is 6.4 mils.

An additional four cells are discharged and stored under the same conditions. None of the cells exhibit leakage of the cell components. The average bulge is 8 mils, the maximum is 14 mils, the minimum is 5 mils, and the standard deviation is 3.9 mils.

An additional ten cells are then discharged under the same conditions, but they are stored at 45° C. for ninety days. None of the cells leak the cell components. The average bulge is 14 mils, the maximum is 18 mils, the minimum is 9 mils and the standard deviation is 2.6 mils.

Four other cells are discharged and stored at 45° C. for ninety days. None of the cells leak. The average bulge is 14 mils, the maximum is 16 mils, the minimum is 12 mils and the standard deviation is 1.9 mils.

An additional ten cells are discharged under the same conditions, but they are stored at 71° C. for 28 days. None of the cells leak. The average bulge is 12 mils, the maximum is 21 mils, the minimum is 8 mils and the standard deviation is 4.9 mils.

Four more cells are discharged and stored at 71° C. for 28 days. None of the cells leak. The average bulge is 14 mils, the maximum is 23 mils, the minimum is 10 and the standard deviation is 6.4 mils.

This example shows the benefit of using low expansion zinc, the burnished brass current collector and the addition of both an ethylene oxide polymer and indium-containing compound in mercury-free cells. The cells can be partially discharged and stored under harsh conditions without leaking. The degree of bulging is very low. The cells of this Example exhibit bulging well below the 40 mil amount which often results in leakage.

Example 2

Cells are prepared in the same manner with the same components as in Example 1, except that no indium hydroxide is added.

Ten of these cells are discharged through a 3.9 ohm resistor for about four hours to approximately 1.2 volts. These are then stored at 21° C. for ninety days. None of the cells leak. The average bulge is 11 mils, the maximum is 17 mils, the minimum is 8 mils and the standard deviation is 3.1 mils.

Four more cells are discharged and stored under the same conditions. None of the cells leak. The average bulge is 13 mils, the maximum bulge is 24 mils, the minimum is 8 mils and the standard deviation is 7.5 mils.

Ten other cells are discharged under the same conditions but are stored at 45° C. for ninety days. None of the cells leak. The average bulge is 22 mils, the maximum is 35 mils, the minimum is 13 mils and the standard deviation is 8.8 mils.

Four other cells are discharged and stored at 45° C. for ninety days. None of the cells leak. The average bulge of the cells is 20 mils, the maximum is 21 mils, the minimum is 19 mils and the standard deviation is 1 mil.

An additional ten cells are discharged under the same conditions but are stored at 71° C. for 28 days. None of the cells leak. The average bulge of the cells is 18 mils, the maximum is 29 mils, the minimum is 7 mils and the standard deviation is 7.9 mils.

Another four cells are discharged and stored at 71° C. for 28 days. None of the cells leaked. The average bulge is 13 mils, the maximum is 15 mils, the minimum is 12 mils and the standard deviation is 1.5 mils.

This example shows the benefits of using the low expansion zinc, burnished brass current collector and ethylene oxide polymer in mercury-free cells. By comparing the bulge data of this example with the bulge data of Example 1, the additional benefit of the presence of indium hydroxide is illustrated. The cells with both indium hydroxide and ethylene oxide polymer generally show a lower average bulge.

What is claimed is:

1. An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode component, and an anode gel comprised of zinc as the active anode component, wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell and said zinc anode has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.

2. The electrochemical cell of claim 1, wherein the cell contains less than 2 parts of mercury per million parts by weight of the cell.

3. The electrochemical cell of claim 2, wherein the cell contains less than 1 part of mercury per million parts by weight of the cell.

4. The electrochemical cell of claim 2, wherein the zinc anode has a gel expansion of less than 20%.

5. The electrochemical cell of claim 4, wherein the zinc anode has a gel expansion of less than 15%.

6. The electrochemical cell of claim 1 wherein the cell contains less than 25 parts of mercury per million parts by weight of the cell.

7. The electrochemical cell of claim 1 wherein the cell contains less than 20 parts of mercury per million parts by weight of the cell.

8. The electrochemical cell of claim 1 wherein said anode component further comprises at least one corrosion inhibitor of the group consisting of organic and inorganic additives.

9. The electrochemical cell of claim 8 wherein said corrosion inhibitor is an ethylene oxide polymer.

10. The electrochemical cell of claim 9 wherein said ethylene oxide polymer is a polyethylene glycol.

11. The electrochemical cell of claim 8 wherein said corrosion inhibitor comprises an indium-containing compound.

12. The electrochemical cell of claim 8 wherein said corrosion inhibitor comprises both organic and inorganic additives.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 5,464,709
DATED : November 7, 1995
INVENTOR(S) : Dale R. Getz et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Cover page, column 1, under "Related U.S. Application Data," "Jun. 25, 1993," should be --Jun. 24, 1993,--.

Signed and Sealed this

Seventeenth Day of November, 1998

Attest.

BRUCE LEHMAN

Attesting Officer

Commissioner of Patents and Trademarks

UNITED STATES PATENT AND TRADEMARK OFFICE
Certificate

Patent No. 5,464,709 Patented: November 7, 1995

On petition requesting issuance of a certificate for correction of inventorship pursuant to 37 CFR 1.324, it has been found that the above-identified patent, through error and without deceptive intent improperly sets forth the inventorship.

Accordingly, it is hereby certified that the correct inventorship of this patent is: Robert F. Scarr.

Signed and Sealed this Twenty-eighth Day of May, 1996.

MARK BELL
Supervisory Patent Examiner
Group 110

Supreme Court, U.S.
FILED
FEB 11 2009
OFFICE OF THE CLERK

No. 08-583

In the Supreme Court of the United States

ENERGIZER HOLDINGS, INC., ET AL., PETITIONERS

v.

INTERNATIONAL TRADE COMMISSION, ET AL.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR THE FEDERAL RESPONDENT IN OPPOSITION

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QUESTION PRESENTED

Whether petitioners' patent claims are invalid for failure to set forth a written description of the claimed invention, see 35 U.S.C. 112 para. 1, or for indefiniteness, see 35 U.S.C. 112 para. 2.

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Letter from Sarah E. Hamblin, Esq. to Wayne Herrington, Esq., Office of Gen. Counsel, U.S. Int'l Trade Comm'n (Jan 24, 2005) 5

In the Supreme Court of the United States

No. 08-583

ENERGIZER HOLDINGS, INC., ET AL., PETITIONERS

v.

INTERNATIONAL TRADE COMMISSION, ET AL.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR THE FEDERAL RESPONDENT IN OPPOSITION

OPINIONS BELOW

The opinion of the court of appeals (Pet. App. 1a-47a) is unreported. The decision of the International Trade Commission (Pet. App. 48a-75a) is unreported. An earlier opinion of the court of appeals (Pet. App. 76a-88a) is reported at 435 F.2d 1366. An earlier decision of the International Trade Commission (a redacted version of which is reprinted at Pet. App. 89a-125a) is unreported. The decision of the administrative law judge (excerpts of the public portion of which are reprinted at Pet. App. 126a-146a) is unreported.

JURISDICTION

The judgment of the court of appeals was entered on April 21, 2008. A petition for rehearing was denied on

August 1, 2008 (Pet. App. 147a-149a). The petition for a writ of certiorari was filed on October 30, 2008. The jurisdiction of this Court is invoked under 28 U.S.C. 1254(1).

STATEMENT

Petitioners filed a complaint with the International Trade Commission (Commission) alleging violations of Section 337 of the Tariff Act of 1930, ch. 497, 46 Stat. 703, which prohibits "[t]he importation into the United States, the sale for importation, or the sale within the United States after importation * * * of articles that infringe a valid and enforceable United States patent." 19 U.S.C. 1337(a)(1)(B). The complaint was based on the importation and sale by intervenor-respondents of certain zero-mercury-added alkaline batteries. Petitioners alleged that the intervenor-respondents had infringed claims 1 through 7 of United States Patent No. 5,464,709 ('709 patent). Pet. App. 5a.[1]

The Commission terminated its investigation after concluding that the asserted claims of the '709 patent were invalid for failure to meet the definiteness requirement of 35 U.S.C. 112 para. 2. Pet. App. 89a-125a. The court of appeals reversed and remanded. *Id.* at 76a-88a. On remand, the Commission determined that the claims of the patent were invalid for failure to meet the written description requirement of 35 U.S.C. 112 para. 1, and that, if valid, the claims were not infringed by the imported products. Pet. App. 48a-75a. The court of appeals affirmed the judgment. *Id.* at 1a-47a.

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[1] Petitioners initially alleged infringement of Claims 1 through 12 of the '709 patent. During the course of the investigation, however, petitioners abandoned their allegation that Claims 8 through 12 had been infringed. Pet. App. 5a.

1. a. The patent statute provides that "[t]he specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains * * * to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention." 35 U.S.C. 112 para. 1. The statute further provides that "[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. 112 para. 2. The "claim" is "the portion of the patent document that defines the scope of the patentee's rights." *Markman* v. *Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996).

b. The specification of the '709 patent purports to describe alkaline cells or batteries that are "substantially free of mercury" due to the inclusion of a multicomponent "anode gel" that uses so-called "low expansion" zinc as the "active anode material." Pet. Supp. App. SA4. The so-called "low expansion" zinc used in the anode gel is selected from available zinc powders by using a test to measure the expansion rate of a test anode gel mix made from 63 grams of the zinc powder being screened. The test employs a special electrochemical test cell and apparatus described in the specification. Zinc powders that pass the test, known as "low expansion" zincs, may then be combined with other materials to make the anode gels of the alkaline cells. See Pet. App. 99a-100a. The specification describes the anode gel as the anode of the claimed alkaline cell and the powdered zinc as the active anode component of that anode. *Id.* at 115a.

Claim 1 of the '709 patent, on which claims 2 through 7 depend, claims a commercial battery. Pet. App. 8a. Claim 1 sets forth the claimed invention as follows:

> An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode component, and an anode gel comprised of zinc as the active anode component, wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell and said zinc anode has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A.

Ibid.

2. The administrative law judge (ALJ) ruled for petitioners on their Section 337 complaint, concluding that their patent claims were valid and that the claims had been infringed. Pet. App. 127a. The ALJ explained that "[t]he main dispute among the parties is whether the term 'said zinc anode' [in Claim 1 of the patent] refers to the 'anode' previously mentioned in the claim or to the 'zinc as the active anode component.'" *Id.* at 136a. The ALJ noted the parties' agreement "that the term 'said zinc anode' lacks an antecedent basis in the claim," *i.e.*, that the term "zinc anode" does not appear in the claim before the term "said zinc anode." *Id.* at 137a. He also noted petitioners' acknowledgment that the term was ambiguous, and that it "even appears that 'said zinc anode' is referring to the anode gel of the electrochemical cell." *Id.* at 138a. The ALJ concluded, however, that an amendment made by the applicant while the '709 patent application was pending before the Patent and Trademark Office made clear that the applicant's "intention was that the 'said zinc anode' refer to the zinc." *Id.* at

140a. That amendment had deleted the word "gel" from the phrase "said zinc anode gel," explaining that "[i]t is the zinc which is to be tested, as set forth in the specification." *Ibid.* (citation omitted).

3. On review, the Commission reversed, concluding that the claims of the patent were invalid for indefiniteness. Pet. App. 89a-125a. The Commission rejected petitioners' argument that the term "said zinc anode" means "said zinc" or "said zinc as the active anode component." The Commission explained that such a construction would effectively read the word "anode" out of the term "said zinc anode" and thus would constitute an impermissible rewriting of the claims. *Id.* at 119a-125a. The Commission rejected the prosecution history relied on by the ALJ, explaining that, "[i]f anything, it further indicates that [petitioners] erred in drafting [C]laim 1." *Id.* at 121a. The Commission noted the inventor's testimony in that regard: "I think that word 'anode' actually was there in error. It should have said zinc powder that was used in the zinc anode." 2/23/04 Tr. 721-722.[2]

The Commission also rejected intervenor-respondents' proposed construction of the term "said zinc anode" as referring to "anode gel." The Commission explained that, if that reading of the disputed term were adopted, "the claim would then require [that] the anode gel of the 'electrochemical cell' (the alkaline cell destined for consumers) be 'discharged for 161 minutes to

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[2] The Commission quoted that testimony in its decision but redacted it from the original public version at petitioners' request. Although petitioners withdrew that request, see Letter from Sarah E. Hamblin, Esq. to Wayne Herrington, Esq., Office of Gen. Counsel, U.S. Int'l Trade Comm'n (Jan. 24, 2005), the petition appendix reproduces the Commission's opinion with that testimony redacted. See Pet. App. 121a-122a.

15% depth of discharge at 2.88A,' language that the specification associates only with the measurement or test cell, which is not referred to in the claim." Pet. App. 122a. The Commission further noted that "such discharge contemplates using 63 grams of zinc (the amount of zinc used in the zinc anode gel mix of the test cell) and there is no dispute that no commercial alkaline cell employs 63 grams of zinc in its anode gel." *Id.* at 123a.

4. On appeal to the Federal Circuit, petitioners contended that the claims were not invalid for indefiniteness because the term "said zinc anode" should be construed to mean "the zinc that is the active anode component." 05-1018 Pet. C.A. Br. 21. The federal respondent argued that so construing the term would constitute impermissible rewriting of the claims because "it would require that the word 'anode' be read out of the term 'said zinc anode.'" 05-1018 Gov't C.A. Br. 32.

The court of appeals reversed and remanded. Pet. App. 76a-88a. In a unanimous opinion, the court held that petitioners' patent claims were not invalid for indefiniteness, "despite [the] lack of explicit antecedent basis for 'said zinc anode,'" because the claim "nonetheless has a reasonably ascertainable meaning." *Id.* at 87a. The court found that, in the context of the claim as a whole, the term "'anode gel' is by implication the antecedent basis for 'said zinc anode.'" *Id.* at 88a. It therefore reversed "[t]he Commission's holding of invalidity on the ground of indefiniteness." *Ibid.*

5. On remand, the Commission applied the Federal Circuit's construction of the term "said zinc anode" and concluded that the asserted claims were invalid for failure to meet the written description requirement of 35 U.S.C. 112 para 1. Pet. App. 61a-70a. The Commission

rejected petitioners' argument that the term "said zinc anode" should be read to mean "said zinc," explaining that the Federal Circuit had necessarily rejected that argument when it concluded that "'said zinc anode' refers to the 'anode gel' of the claimed electrochemical cell." *Id.* at 62a. The Commission further concluded that, even if the patent claims were not invalid for failure to meet the written description requirement, the products imported by the intervenor-respondents did not infringe the claims if the term "said zinc anode" were understood to mean "anode gel." *Id.* at 68a-69a.[3]

6. The court of appeals affirmed. Pet. App. 1a-47a. Judge Schall (*id.* at 4a-25a) and Judge Linn (*id.* at 26a-30a) issued separate unpublished opinions concluding that the patent claims were invalid. Judge Newman dissented. *Id.* at 32a-47a.

a. Judge Schall concluded that the court of appeals' previous decision, which had held "that 'anode gel' is by implication the antecedent basis for 'said zinc anode,'" Pet. App. 15a (quoting *id.* at 88a), "constitute[d] a clear statement of claim construction," *ibid.* He therefore rejected, as "a backdoor attempt to overturn the construction" adopted by the court of appeals in its previous decision, petitioners' argument that the term "said zinc anode" refers to the zinc used to manufacture the anode gel. *Id.* at 17a.

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[3] Two Commissioners dissented. Pet. App. 71a-75a. They would have remanded the case to the ALJ "to construe the remaining claim terms in accordance with the court's holding that the antecedent basis for the 'said zinc anode' is 'anode gel.'" *Id.* at 72a. They expressly concurred, however, with the majority's rejection of petitioners' argument to the extent that they "would have us read the claim term 'said zinc anode' to mean 'said zinc.'" *Id.* at 72a n.1.

Judge Schall concluded that, under the Federal Circuit's decision on the prior appeal, Claim 1 of the '709 patent "unambiguously requires that the anode gel of a battery sold to consumers undergo the discharge test set forth in the specification." Pet. App. 19a. Judge Schall explained, however, that "no commercial battery could be subjected to such a test," *ibid.*, because no such battery "contains anywhere near" the 63 grams of zinc required by the test described in the specification, *id.* at 12a n.3. While noting that the "inventor easily could have avoided this problem by drafting [C]laim 1 so that it read 'said zinc anode *is comprised of zinc that*,'" Judge Schall explained that the inventor had not done so, and that the court of appeals "cannot rewrite the claim." *Id.* at 19a. Judge Schall determined that the asserted claims failed to meet the written description requirement because the specification did not describe the invention claimed to be protected by the claims: the patent's specification described "a test to pre-screen zincs for use in zero-mercury added alkaline batteries to be sold to consumers," but "the claims of the '709 patent were drafted to claim commercial alkaline batteries." *Id.* at 24a.

b. Judge Linn agreed with Judge Schall that the court's previous decision had determined that "anode gel" is the antecedent for the term "said zinc anode." Pet. App. 28a & n.2. In Judge Linn's view, however, the prior decision did not foreclose further consideration of whether the patent claims were invalid for indefiniteness in other respects. Judge Linn noted that the specification must "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention," *id.* at 28a (quoting 35 U.S.C. 112 para. 2), and he concluded

that the claims were "insolubly ambiguous," *id.* at 30a. He explained that "[t]he claim cannot be interpreted to mean a battery cell with an anode gel having 63 grams of zinc, not only because such a construction is inconsistent with present commercial requirements, but more significantly because that would require an anode gel which expands in accordance with the specifications of the test cell configuration and yet acts in concert with a cathode of the type specified in the commercial battery examples." *Id.* at 29a. "On the other hand," he observed, "to construe the claim to cover what the applicant seems to have intended—namely, a battery cell with an anode containing zinc of a purity determined by use of the disclosed test cell procedure—would require that we rewrite the claim." *Ibid.*

c. Judge Newman dissented. Pet. App. 31a-47a. While recognizing that "the '709 patent's claims are not perfect," she would have held that "the invention that is claimed is the invention that is unambiguously and clearly described in the specification." *Id.* at 32a. She concluded that "[t]he specification shows that the discharge time and conditions and gel expansion parameters are for the test cell." *Id.* at 43a. In her view, the relevant question was "whether [petitioners'] claims in the '709 patent should be construed in accordance with their undisputed intended meaning, as clearly described in the specification and accepted by the patent examiner, or whether this patentee must be punished for a 'disconnect' or 'ambiguity' that has no relation to what was invented." *Id.* at 45a. She would have upheld the validity of the patent claims by construing "the claim's gel expansion criterion as determined by a test procedure" described in the specification. *Id.* at 47a.

ARGUMENT

The decision of the court of appeals is correct and does not present the broad question of claim construction framed in the petition for a writ of certiorari. Further review is not warranted.

1. The decision below is correct. On the first appeal, the court of appeals unanimously concluded that "'anode gel' is by implication the antecedent basis for 'said zinc anode.'" Pet. App. 88a. That construction of the patent claims was necessary to the first panel's holding that the claims were not invalid for indefiniteness for lack of an antecedent for the term "said zinc anode." *Ibid.* So construed, the claims are invalid because there is a "fundamental disconnect" between the claims and the specification. *Id.* at 17a.

That disconnect renders the claims invalid for both of the reasons given by the judges in the majority on the second appeal. First, as Judge Schall concluded, the claims fail the written description requirement because "what is claimed in [C]laim 1 of the '709 patent is not what is described in the patent specification." Pet. App. 23a. Whereas the specification indicates that "the invention of the '709 patent is a *test* to pre-screen zincs for use in zero-mercury added alkaline batteries," the patent's claims encompass the completed batteries themselves. *Id.* at 24a (emphasis added). Second, as Judge Linn concluded, Claim 1 is indefinite because it fails to specify what the applicant regarded as his invention. The patent claims a commercial battery with an anode gel having more zinc than any commercial battery, and it claims a battery cell with "an anode gel which expands in accordance with the specifications of the test cell configuration and yet acts in concert with a cathode of the type specified in the commercial battery examples." *Id.* at

29a. As the Commission explained, moreover, even if the claims were valid, the batteries that respondent-intervenors imported would not infringe the claims because none of those batteries contain the amount of zinc necessary to fall within the scope of the claim when the term "said zinc anode" is construed to mean "anode gel." *Id.* at 68a-69a.

2. a. This case does not implicate the broad principles of claim construction discussed in the petition. See Pet. 16-28. Petitioners assert that the Federal Circuit has two approaches to claim construction: "hypertextualism" and "the pragmatic approach." Pet. 17. According to petitioners, those two approaches reflect different views as to the extent to which judges should look to "sources of expertise outside the patent document," such as expert testimony, Pet. 20, in order to "retain the validity of the claims," Pet. 28.

Even assuming the existence of two such approaches, none of the three opinions on the second appeal turns on the proper use of experts or extrinsic evidence. Instead, all three members of the second panel based their analyses on the language of the patent documents, namely the claims and specification. Judge Schall and Judge Linn each concluded that there was an irreconcilable disconnect between the claims and the specification. See Pet. App. 24a (Schall, J.) ("The problem in this case is that the specification of the '709 patent does not teach what is claimed, whereas the claims of the patent do not claim what is taught."); *id.* at 29a (Linn, J.) (concluding that Claim 1 "can hardly be said to reflect what the applicant regarded as his invention"). Although Judge Newman concluded (*id.* at 32a) that the specification's clarity could be used to save the "not perfect" language of the claims, see, *e.g.*, *id.* at 40a (criticizing the majority for

"simply declin[ing] to read the claims in light of the specification"), she did not base that determination on evidence extrinsic to the patent itself.

Petitioners also suggest (Pet. 27-28) that Judge Schall and Judge Linn took "a hypertextualist approach to the term 'said zinc anode,' refusing to adopt the sensible pragmatic construction" even "while recognizing that there was only one logical interpretation of the claims—'said zinc anode' means 'zinc.'" But petitioners' current contention that the term "said zinc anode" must be construed to mean "said zinc" is contrary to the Federal Circuit's *unanimous* ruling on the first appeal, in an opinion written by Judge Newman, that the term "said zinc anode" means "anode gel." Pet. App. 88a. In their opinions on the second appeal, Judge Schall (*id.* at 17a) and Judge Linn (*id.* at 28a & n.2) simply took that earlier holding as a given and evaluated the validity of the patent claims using that construction. The unanimity of the first decision, as well as the fact that the dissenting judge on the second appeal was the author of that opinion, undermines petitioners' suggestion that the court's construction of "said zinc anode" as "anode gel" is attributable to disarray within the Federal Circuit concerning the proper approach to patent construction.[4]

b. Petitioners' understanding of Claim 1 of the '709 patent suffers from two distinct infirmities. First, as explained above, petitioners' contention that the term

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[4] Relying on a handbook on batteries, petitioners suggest (Pet. 3, 28, 36) that "[p]eople of skill in the art understand that the anode *is* powdered zinc." Pet. 28. In their opening briefs to the Federal Circuit on both appeals, however, petitioners stated: "The anode of an alkaline battery is a gel made by mixing zinc powder, which is the active anode component, with electrolyte and a gelling agent." 05-1018 Pet. C.A. Br. 7; 2007-1197 Pet. C.A. Br. 8.

"said zinc anode" means zinc *powder* reads the word "anode" out of the claims and is inconsistent with the Federal Circuit's unanimous ruling on the previous appeal. Second, even if the term "said zinc anode" could plausibly be understood to refer to the zinc component of the anode gel, the claim literally indicates that the "zinc anode" of each commercial battery must be subjected to a test that no commercial battery could satisfy. See Pet. App. 12a n.3, 19a (Schall, J.); *id.* at 29a (Linn, J.).

At bottom, petitioners' argument is not that the Federal Circuit misconstrued *ambiguous* patent language, but that the court ought to have redrafted their claims in order to save the patent from invalidity. As Judge Linn explained, "to cover what the applicant seems to have intended—namely, a battery cell with an anode containing zinc of a purity determined by use of the disclosed test cell procedure—would require that [the court] rewrite the claim." Pet. App. 29a (Linn, J.); see *id.* at 19a (Schall, J.). But the Federal Circuit "repeatedly and consistently has recognized that courts may not redraft claims, whether to make them operable or to sustain their validity." *Chef Am. Inc.* v. *Lamb-Weston, Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004) (citing cases); see *ibid.* (noting that when "claims are susceptible to only one reasonable interpretation and that interpretation results in a nonsensical construction of the claim as a whole, the claim must be invalidated") (quoting *Process Control Corp.* v. *Hydreclaim Corp.*, 190 F.3d 1350, 1357 (Fed. Cir. 1999), cert. denied, 529 U.S. 1037 (2000)); cf. *United States* v. *Locke*, 471 U.S. 84, 95 (1985) (explaining, with respect to the interpretation of federal statutes, that "the fact that Congress might have acted with greater clarity or foresight does not give courts a

carte blanche to redraft statutes in an effort to achieve that which Congress is perceived to have failed to do").

None of the cases cited by petitioners holds that a court may construe patent language in a manner contrary to its literal terms in order to save the patent claims from invalidity. To the contrary, many of those decisions recognize that such judicial rewriting is prohibited. See, *e.g.*, *Ortho-McNeil Pharm., Inc.* v. *Mylan Labs.*, 520 F.3d 1358, 1362 (Fed. Cir. 2008) ("In *Chef America* * * * this court explained that a patent must be interpreted 'as written, not as the patentees wish they had written it.'") (quoting 358 F.3d at 1374); *Nazomi Commc'ns, Inc.* v. *ARM Holdings, PLC*, 403 F.3d 1364, 1368 (Fed. Cir. 2005) ("[C]ourts should not rewrite claims to preserve validity."); *Rhine* v. *Casio, Inc.*, 183 F.3d 1342, 1345 (Fed. Cir. 1999) ("We have also admonished against judicial rewriting of claims to preserve validity."); *Autogiro Co. of Am.* v. *United States*, 384 F.2d 391, 396 (Ct. Cl. 1967) ("No matter how great the temptations of fairness or policy making, courts do not rework claims.").[5]

The patent holder is rightly held to the consequences of its own poor draftsmanship. The patent laws require the applicant to define claims with specificity, 35 U.S.C. 112, "not only to secure to him all to which he is entitled,

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[5] The amicus brief that the United States filed at the en banc stage in *Phillips* v. *AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005), cert. denied, 546 U.S. 1170 (2006) on which petitioner relies (Pet. 34-35), is in accord with that principle. See Gov't Amicus Br. at 17, in Nos. 03-1269, -1286 (Fed. Cir. Sept. 20, 2004) ("[C]laims can only be construed to preserve their validity where the proposed claim construction is practicable, is based on sound claim construction principles, and *does not revise or ignore the explicit language of the claims*.") (emphasis added).

but to apprise the public of what is still open to them." *McClain* v. *Ortmayer*, 141 U.S. 419, 424 (1891). It is "just and fair, both to the patentee and to the public," to expect that the patentee will "understand, and correctly describe, just what he has invented, and for what he claims a patent." *Merrill* v. *Yeomans*, 94 U.S. 568, 573-574 (1877). That is especially true given that the applicant can correct any initial drafting errors by amending the claims during the application process. And even after a patent has been issued, the patent holder has opportunities to amend the claims, either by filing a reissue application or by seeking a certificate of correction. 35 U.S.C. 251, 255.

As Judge Schall observed, petitioners "easily could have avoided" the problems caused by their use of the term "said zinc anode." Pet. App. 19a.[6] Moreover, the term "said zinc anode" resulted from an amendment during the application process, as to which the patent applicant later admitted a mistake: "I think that word 'anode' actually was there in error. It should have said zinc powder that was used in the zinc anode." 2/23/04 Tr. 721-722. Despite that acknowledged mistake, petitioners never sought to further amend that term. Nor did they attempt to change it after the patent was issued, either by seeking a certificate of correction or by

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[6] Indeed, in a related patent, petitioners referred to "[a]n electrochemical cell comprising . . . an anode gel comprised of low expansion zinc which has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A." Pet. App. 30a (Linn, J.). As Judge Linn explained, "[i]f the applicant desired coverage of a battery with zinc having specified properties, it should have written [C]laim 1 of the '709 patent the way it wrote [C]laim 1 of its related [patent]." *Id.* at 29a-30a.

requesting reissue of the patent, even though they sought two certificates of correction on other issues.[7]

3. For at least three additional reasons, this case is not a suitable vehicle for resolving the broad question framed in the petition for a writ of certiorari. First, as the various opinions on petitioners' two appeals make clear, the court's resolution of this case is highly fact-bound. Second, the court of appeals' final disposition is unpublished, with no single majority opinion. Third, the court's ultimate resolution of the case—and the crux of petitioners' dispute with the outcome of the proceedings below—flows from the construction given the term "said zinc anode" in the court's decision on the prior appeal. That factbound, unanimous decision would not have warranted review by this Court when it was issued, and there is no reason for a different conclusion now.

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[7] The patent laws establish certain requirements that must be satisfied before a patent may be reissued or a certificate of correction may be granted. See 35 U.S.C. 251, 255. We express no view on whether petitioners could have met those requirements.

CONCLUSION

The petition for a writ of certiorari should be denied.

Respectfully submitted.

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No. 08-583

IN THE
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ENERGIZER HOLDINGS, INC., *et al.*,
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v.

INTERNATIONAL TRADE COMMISSION, *et al.*,
Respondents.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF IN OPPOSITION

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QUESTION PRESENTED

Whether this Court should grant certiorari to review the nonprecedential judgment of a Federal Circuit panel, based on the particular facts of this case, that Claim 1 of Petitioners' patent was invalid under 35 U.S.C. § 112, ¶ 1 or ¶ 2, because the advance in the art invented and described by the patentee is not what the patentee has claimed.

RULE 29.6 STATEMENT

Respondents Golden Power Industries, Ltd., Guangdong Chaoan Zhenglong Enterprise Co., Ltd., Guangzhou Tiger Head Battery Group Co., Ltd., Fujian Nanping Nanfu Battery Co., Ltd., Hi-Watt Battery Industry Co., Ltd., Ningbo Baowang Battery Co., Ltd., Sichuan Changhong Electric Co., Ltd., and Zhongyin (Ningbo) Battery Co., Ltd. state that the parent companies and publicly held companies that own 10% or more of the stock of a party include the following:

a. Golden Power Industries, Ltd.
    i. Golden Power Investments (B.V.I.) Limited
    ii. Golden Villa Ltd.
b. Guangdong Chaoan Zhenglong Enterprise Co.
    i. Huang Peilong
c. Guangzhou Tiger Head Battery Group Co., Ltd.
    i. Guangzhou Battery Factory
    ii. Guangzhou Soap Factory
d. Fujian Nanping Nanfu Battery Co., Ltd.
    i. China Battery Limited
    ii. Fujian Nanping Battery Factory
e. Hi-Watt Battery Industry Co., Ltd.
    i. Rio Assets Limited

ii. The Conqueror Capital Ltd.

iii. Yue Xiu International Development Ltd.

f. Ningbo Baowang Battery Co., Ltd.

i. Rayovac PRC

ii. Ningbo Baowang Investment Co.

g. Sichuan Changhong Electric Co., Ltd.

i. Sichuan Changhong Electronics Group Corporation Ltd.

h. Zhongyin (Ningbo) Battery Co., Ltd.

i. Ningbo Sonluk Battery Co., Ltd.

ii. GP Batteries International Limited

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35 U.S.C. § 112 ..... *passim*

35 U.S.C. § 112, ¶ 1 ..... *passim*

35 U.S.C. § 112, ¶ 2 ..... *passim*

OTHER AUTHORITIES:

3 E. Lipscomb, *Walker on Patents* § 11:1 (3d ed. 1985) 14

IN THE

Supreme Court of the United States

No. 08-583

ENERGIZER HOLDINGS, INC., *et al.*,
Petitioners,

v.

INTERNATIONAL TRADE COMMISSION, *et al.*,
Respondents.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF IN OPPOSITION

Respondents Golden Power Industries, Ltd., Guangdong Chaoan Zhenglong Enterprise Co., Ltd., Guangzhou Tiger Head Battery Group Co., Ltd., Fujian Nanping Nanfu Battery Co., Ltd., Hi-Watt Battery Industry Co., Ltd., Ningbo Baowang Battery Co., Ltd., Sichuan Changhong Electric Co., Ltd., and Zhongyin (Ningbo) Battery Co., Ltd. (collectively, "China Battery Respondents") respectfully request that this Court deny the petition for writ of certiorari seeking review of the judgment of the United States Court of Appeals for the Federal Circuit.

INTRODUCTION

The problem confronting Petitioners Energizer Holdings, Inc. and Eveready Battery Company, Inc. (collectively, "Energizer" or "Petitioners") is of their own making.[1] The problem is not, as Energizer would have it, hypertextualism or excessive formalism in the Federal Circuit's approach to claim construction warranting this Court's extraordinary intervention. *Cf.* Pet. 17-18. The problem is simply that Energizer's patent claims went well beyond what the inventor actually invented.

As the Federal Circuit panel majority aptly recognized, the point of novelty that advanced the art in regard to U.S. Patent No. 5,464,709 (the " '709 patent") was a limited pre-screening test described in the specification for selecting zinc powder to be used in manufacturing zero-mercury-added alkaline batteries. Pet. App. 8a, 24a, 29a. Energizer formulated its patent claims, however, in an effort to convert that limited advance in the art to an expansive monopoly covering *all* zero-mercury-added alkaline batteries, regardless of whether the test described by Energizer was utilized in their manufacture. Energizer invented and described a test, but it claimed a battery.

In this "fundamental disconnect," Pet. App. 17a, lie the bases for the Federal Circuit panel majority's unexceptional determination that Eveready's '709 patent is invalid under 35 U.S.C. § 112. This case

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[1] For purposes of recusal, counsel for respondents states that Hogan & Hartson L.L.P. began representing respondents in this matter on June 2, 2003.

involves nothing more than the routine application of settled patent validity principles to the specification and single independent claim of the '709 patent. Energizer drafted the claim language so that it does not claim what is described and taught and what the inventor himself regarded as his invention. The Federal Circuit properly found the patent to be invalid. The petition should be denied.

COUNTERSTATEMENT

1. All alkaline batteries have an alkaline electrolyte, a manganese dioxide cathode, and an anode that contains zinc along with other materials. The zinc in a battery anode, however, tends to corrode over time, in turn causing battery leakage. Battery manufacturers initially solved that problem by introducing some mercury into the zinc anode, because mercury inhibits zinc's corrosion. But disposing of mercury-containing batteries poses certain environmental concerns, leading manufacturers and scientists to explore other means of limiting zinc corrosion.

Basic science presented a number of options, including selecting among existing zinc powder supplies to identify "low-expansion" zinc and selecting among corrosion-inhibiting additives and/or alloys. All of these options were known to and regularly practiced by all of the major battery manufacturers. *See* Ct. App. J.A. 7750-51; *id.* at 8547-49; *id.* at 13589:1-5; *id.* at 13644:6-18.

Energizer nonetheless proclaims that it solved the environmental problem of preventing battery leakage without the addition of mercury. Its achievement in fact was far more modest: a test for

selecting among existing zinc samples to determine which zinc could be used to produce batteries that would not leak. In order to prescreen samples from lots of zinc powder before using powder from those lots in its batteries, an Energizer scientist, Dr. Scarr, devised a "gel expansion test"—a lab test cell in a 500 ml. beaker containing an anode gel with 63 grams of zinc, which gel was discharged for 161 minutes to 15% depth of discharge at 2.88 amps. *See* Pet. App. 24a & n.4.

2. Energizer could have attempted to write a process claim for the use of its test, or even a product-by-process claim for a battery manufactured with zinc identified using the test. Instead, Energizer tried to write a claim that would grant it a monopoly over the entire universe of zero-mercury-added alkaline batteries—including those manufactured without using or even knowing about Dr. Scarr's gel expansion test, the sole inventive concept of the patent. The patent that resulted from Energizer's efforts is a hash.

In prosecuting the applications that led to the issuance of the '709 patent, Energizer initially presented broad claims covering all zero-mercury-added alkaline batteries made with "low expansion zinc." Ct. App. J.A. 2048 (*see, e.g.*, Claim 14). The patent examiner repeatedly rejected these claims as obvious over the prior art and indefinite. *Id.* at 2145, 2148-49, 2202-03, 2389-90. Energizer responded to the examiner's obviousness rejection of claims directed to "low expansion zinc" by reference to its gel expansion test, which the cited references did not

teach.[2] *Id.* at 2210. The examiner ultimately allowed the claims based on Energizer's addition of the gel expansion test as an express limitation. *See id.* at 2214 ("The art of record fails to teach an electrochemical cell * * * compris[ing] an anode gel which expands less than 25% after being discharged at 2,88 A for 161 minutes to 15% depth of discharge * * *"). Thus, in response to the examiner's initial objections, Energizer was forced to surrender any effort to claim an electrochemical cell in which the anode gel was made using "low expansion zinc." *Id.* at 2153-57. Subsequent claims presented by Energizer in the chain of applications leading to and including the '709 patent included the gel expansion test that had been added to overcome the examiner's objection. *See, e.g.*, Ct. App. J.A. 2153, 2184, 2543, 2386.

The Summary of Invention for the '709 Patent refers to four different aspects of the claimed electrochemical cell. In the first, the specification provides that "[t]he cell comprises an alkaline electrolyte, a cathode comprising a metal oxide as the active cathode component, and an *anode* comprised of zinc as the active anode component." Supp. App. 4

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[2] As Energizer's counsel initially acknowledged in connection with the prosecution of the '709 patent's European counterpart: "It is known from the prior art that low expansion zinc removes the need for added mercury in the cell and that the use of indium and an organic corrosion inhibitor also remove the need for added mercury in the cell. The prior art therefore teaches ways in which the necessity for adding mercury can be avoided." Ct. App. J.A. 7507. Energizer later sought to recant its attorney's admission.

(col. 1:64-67) (emphasis added). The next aspect again recites the necessary electrolyte and cathode. *Id.* (col. 2:8-10). But this time, instead of referring to an "anode," the specification refers to "an anode *gel* comprising low expansion zinc." *Id.* (col. 2:11) (emphasis added). The third aspect then reverts back to "anode," while the fourth and final aspect specifies that "the anode is a *gel* comprised of zinc." *Id.* (col. 2:33-34) (emphasis added).

The specification also only describes discharge of an anode gel—not zinc powder on its own. *See* Supp. App. 5 (col. 4:16-18) ("Typically, the anode gel expands when it is discharged and then stored."). But the claim makes clear that the "said zinc anode" of the claimed battery is what "has a gel expansion * * * after being discharged * * *." *Id.* at 8 (col. 10:62-64). Energizer conceded as much in its brief to the Commission below. (*See* Petr.'s App. Br. 25, Jan. 24, 2005) ("The 'has a gel expansion * * *' language modifies 'said zinc anode' and, therefore, must be taken into account when interpreting the claim.").[3]

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[3] In this regard, Energizer's assertions that "[t]he anode of an alkaline battery is powdered zinc," Pet. 36, and its drawing suggesting that the anode consists only of "powdered zinc," *id.* at 3, are misleading. The patent plainly indicates that the anode consists of "a mixture of active anode material, electrolyte, [and] optionally an electrolyte-swellable binder." This mixture is the "anode gel." Supp. App. 5 (col. 3:30-31). And the written description goes on to clarify that all of the anode components—the "powdered zinc," "binder," "optional components," and "an amount of the electrolyte" are combined "to form a gel." *Id.* (col. 4:14-16).

What is now Claim 1 of the '709 patent was added to the application as Claim 45 in an amendment filed in late 1994. Ct. App. J.A. 2386. As originally filed, Claim 45 required that "said zinc anode gel" have the requisite gel expansion (less than 25%) after being discharged for 161 minutes to 15% depth of discharge at 2.88A. . *Id.* at 2387. Energizer later amended Claim 45, however, by deleting the word "gel." *Id.* at 2386, 2400. In remarks accompanying the amendment, Energizer stated that "[c]laim 45 * * * [has] been amended to correct a grammatical error. It is the zinc which is to be tested, *as set forth in the specification.*" Ct. App. J.A. 2402 (emphasis added).[4] The claim now reads:

> An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as an active cathode component, and an anode gel comprised of zinc as the active anode component, wherein the cell contains less than 50 parts of mercury per million parts by weight of

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[4] Energizer now maintains that its correction of a "grammatical error" in fact effected a substantive alteration, dropping the central noun of the claim—"anode gel"—and substituting zinc. Pet. 6. But as Judge Linn observed in his concurring opinion below:

> If the applicant desired coverage of a battery with zinc having specified properties, it should have written Claim 1 of the '709 patent the way it wrote Claim 1 of its related U.S. Patent No. 5,395,714 (reciting[ ] "[a]n electrochemical cell comprising * * * an anode gel comprised of low expansion zinc which has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A"). [Pet. App. 29a-30a (Linn, J., concurring).]

> the cell and said zinc anode has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A. [Supp. App. 8 (col. 10:56-64).]

3. Like most of the rest of the battery industry, the China Battery Respondents all brought zero-mercury-added alkaline batteries to market without ever running Energizer's test. And like the other Respondent members of the battery industry, the China Battery Respondents were sued before the ITC for allegedly infringing Energizer's patent.

The trial before the Commission addressed, among other matters, the absence of an express antecedent in Claim 1 for the phrase "said zinc anode." The inventor, Dr. Scarr, was candid: "I think the word 'anode' actually was there in error." Ct. App. J.A. 954.[5] Confronted with the fact that the claim element amended during prosecution, putatively for the purpose of correcting a grammatical error, actually introduced what the inventor regarded as a mistake into the claim, Energizer argued that construing the claim's language as written would

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[5] Energizer removed the testimony containing this critical admission from its Appendix D copy of the Commission's opinion in *Energizer I*, ostensibly based on its claim of confidentiality covering the inventor's testimony. Pet. App. 121a-122a. However, the same passage was included in the *Non*-Confidential Joint Appendix for *Energizer IV* with the following entry in the table of contents: "Commission Opinion dated 10/18/2004 (Confidential Version – Complainants Waive Confidentiality of Their Confidential Business Information on Page 24 of the Commission Opinion)." *See* Ct. App. J.A. 954.

"render the vast majority of the specification" and the "entire invention meaningless." Ct. App. J.A. 10182-83.

The Commission concluded that the '709 patent was invalid for indefiniteness. Ct. App. J.A. 956 ("*Energizer I*"). It rejected Energizer's proposed construction of "said zinc *anode*" to mean zinc *powder*. *Id.* at 953-954. As the Commission explained, construing "said zinc anode" to mean zinc impermissibly reads the word "anode" out of "said zinc anode." *Id.* at 954. The Commission observed that whatever "said zinc anode" means, it must be "discharged" to a specified degree—and zinc by itself is not "discharged." *Id.* at 956. The Commission also rejected Respondents' proposed construction of "said zinc anode" to refer to the previously recited "anode gel," a construction the Commission acknowledged was supported by certain claim language and the specification. Ct. App. J.A. 955. Under that construction, the Commission observed, the anode gel of an actual completed battery—rather than the anode of the test cell—would be subjected to the discharge process described in Claim 1. *Id.*

A Federal Circuit panel reversed. Pet. App. 76a-88a ("*Energizer II*"). The court of appeals found it "apparent that the claim can be construed. In that regard, we conclude that 'anode gel' is by implication the antecedent basis for 'said zinc anode.' " *Id.* at 88a. Energizer undertook no further challenge to the Federal Circuit's decision or to its determination that the antecedent basis for "said zinc anode" was the recited "anode gel."

On remand to the Commission, Energizer recanted its doomsday forecasts about what would attend a

Federal Circuit determination that "said zinc anode" means "anode gel." Now it asserted, instead, that the Federal Circuit's determination had no consequence at all, that the Commission was free to ignore the Federal Circuit's holding, and that the Commission should re-interpret "said zinc anode" to mean zinc—the interpretation rejected by the Federal Circuit in *Energizer II*.

The Commission rejected Energizer's attempt to relitigate the Federal Circuit's decision in *Energizer II*. Pet. App. 48a-70a ("*Energizer III*"). Given the court's holding that "said zinc anode" refers to the "anode gel" of the claimed electrochemical cell, the Commission ruled that "by necessary implication, the [Federal Circuit] rejected E[nergizer]'s construction" of the term. *Id.* at 62a. The Commission concluded that under the Federal Circuit's claim construction, the asserted claims were invalid for failure to meet the written description requirement of 35 U.S.C. § 112, ¶ 1. *Id.* at 64a-67a. The Commission went on to find that even if the '709 patent were valid, the accused articles would not infringe. *Id.* at 67a.

Energizer again appealed the Commission's ruling to the Federal Circuit, which in an unpublished decision affirmed the Commission's determination of invalidity. Pet. App. 1a-30a ("*Energizer IV*"). In separate opinions, Judges Schall and Linn agreed that Energizer's proffered construction of "said zinc anode" would require impermissible claim rewriting. *Id.* at 17a-19a (Schall, J.); *id.* at 29a-30a (Linn, J.). Both judges agreed that the claim as written was at odds with the specification, and both judges agreed

that these problems rendered the patent invalid under 35 U.S.C. § 112. *Id.* at 3a-30a.

Judge Schall began by rebuffing Energizer's attempt (again) to relitigate the prior Federal Circuit panel's construction of Claim 1. Pet. App. 14a-17a. Judge Schall explained that the prior panel plainly *did* construe the claim term "said zinc anode," when it concluded that " 'anode gel' is by implication the antecedent basis for 'said zinc anode.' " *Id.* at 17a (quoting *Energizer II*, 435 F.3d 1366, 1371 (Fed. Cir. 2006)). Energizer's insistence that "said zinc anode" denotes "the zinc used to manufacture the 'anode gel' in the battery cell" thus "squarely contradicts" the Federal Circuit's claim construction. Pet. App. 17a. Because the prior panel concluded that "said zinc anode" denotes "anode gel," Judge Schall went on, "it means that, as the Commission held, it is the 'anode gel' of the battery cell sold to consumers—not the zinc of the test cell—that is tested in accordance with the parameters of the claim." *Id.*

Judge Schall then concluded that a "fundamental disconnect" existed between the patent claims and the specification. *Id.* The specification, he explained, speaks of a test cell, while the patent claims speak of "the anode of a completed battery." *Id.* But the claims—not the specification—define the right to exclude, and "[a] court cannot remedy for Energizer the gulf that it has created between the claims and the specification by speaking solely of a test cell in the specification while claiming a completed battery in the claims." *Id.* at 18a.

Judge Schall acknowledged and rejected Energizer's argument that construing the claim as

written led to an "illogical result." *Id.* Citing to the Federal Circuit's decision in *Chef America* v. *Lamb-Weston, Inc.*, 358 F.3d 1371 (Fed. Cir. 2004), the judge concluded that, like the claim in that case, Energizer's Claim 1 "unambiguously requires an illogical result"—and like the claim in that case, that illogical result would stand. Pet. App. 19a. It is not the business of the court, he explained, to "rewrite the claim" by ignoring unambiguous language. *Id.*

Judge Schall then concluded that the Commission's determination that the patent failed to satisfy Section 112's written description requirement—a finding of fact—should be affirmed. *Id.* at 23a-25a. The Commission had identified a "major disconnect" between the patent's claims and the specification: the patent *claims* a commercial battery cell, *id.* at 21a-22a, but its specification *discloses* a test cell not referenced in the claims. *Id.* at 23a-24a. The Commission's determination of invalidity for failure of written description accordingly was "neither unsupported by substantial evidence nor tainted by legal error." *Id.* at 25a.

Judge Linn concurred in the result. Pet. App. 27a-30a. Where Judge Schall had found the '709 patent invalid for lack of written description under 112, ¶1, Judge Linn—who self-identified as a critic of Federal Circuit precedents finding a "separate written description requirement" within Section 112, ¶ 1—found the patent invalid under Section 112, ¶ 2. *See* Pet. App. 27a, 30a. As Judge Linn explained, a patent applicant must "particularly point[ ] out and distinctly claim[ ]" the subject matter of his invention—"[a]nd therein lies the problem." Pet. App. 28a. Claim 1 simply cannot be interpreted to be

a battery cell with a massive zinc anode, because it "can hardly be said to reflect what the applicant regarded as his invention." *Id.* at 29a. Nor can the court "rewrite the claim" to cover the applicant's intention. *Id.* Judge Linn accordingly concluded that the claim was "insolubly ambiguous, and thus, indefinite." *Id.* at 29a-30a (citing *Exxon Research & Eng'g Co.* v. *United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001)).

The difference in the panel majority's approaches, as can be seen from their opinions, largely is one of nuance and nomenclature. The written description requirement of 35 U.S.C. § 112, ¶ 1, is designed to ensure that the boundaries of the property right conferred by a patent are clear, so that efficient investment can be made in innovation. *See Festo Corp.* v. *Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731 (2002) ("A patent holder should know what he owns, and the public should know what he does not."). As this Court has explained, the written description requirement maintains the "delicate balance" between inventors, "who rely on the promise of the law to bring the invention forth," and the public, "which should be encouraged to pursue innovations, creations, and new ideas beyond the inventor's exclusive rights." *Id.* (citing *Bonito Boats, Inc.* v. *Thunder Craft Boats, Inc.*, 489 U.S. 141, 150 (1989)).

The definiteness requirement of 35 U.S.C. § 112, ¶ 2, serves the same purpose. As the Court noted in *Markman* v. *Westview Instruments, Inc.*, 517 U.S. 370, 373 (1996), the definiteness requirement was essential to Congress's objective of "secur[ing] to the [patentee] all to which he is entitled, [and]

appris[ing] the public of what is still open to them." *Id.* (quoting *McClain* v. *Ortmayer*, 141 U.S. 419, 424 (1891)). The claim operates to "define[ ] the scope of the patent grant." *Id.* (quoting 3 E. Lipscomb, *Walker on Patents* § 11:1, at 280 (3d ed. 1985)). Where a claim fails to set forth the scope of the patent grant with the requisite definiteness, courts are unable to determine "what the words in the claim mean," a necessary determination for a finding of infringement. *Id.* at 374 (quotation and citation omitted). As with the failure to provide an accurate written description, the failure to set forth claims with definiteness thwarts the "delicate balance" established by Congress between the interests of inventors and the public. *See Festo Corp.*, 535 U.S. at 731.

Although the written description requirement of 35 U.S.C. § 112, ¶ 1, and the definiteness requirement of 35 U.S.C. § 112, ¶ 2, are "two distinct elements" of the statute, see *Markman*, 517 U.S. at 373, they both are essential to ensuring that inventors granted the valuable right of exclusion accompanying a patent grant also make an adequate and full disclosure to the public. And however the problem identified by Judges Schall and Linn is denominated—as a failure of adequate written description or of definiteness—it renders the patent invalid.

Judge Newman dissented from the majority's invalidity conclusions. Pet. App. 31a-47a. No judge on the panel reached the Commission's alternative conclusion that even if the claims of the '709 patent were valid, the patent was not infringed.

Energizer's combined petition to the Federal Circuit for panel rehearing and rehearing en banc was denied without a recorded dissenting vote. Pet. App. 147a-149a. Energizer now has sought review from this Court. Review should be denied.

REASONS FOR DENYING THE WRIT

Energizer's petition asks this Court to conduct a broad-ranging review of general claim construction principles through the prism of this case. It is hard to imagine a case less amenable to the task. To begin with, the question Energizer has presented for review bears little relevance to the actual legal issues raised and decided in this case. The case also turns on a set of highly idiosyncratic facts. And the result reached by the panel below is fully in keeping with this Court's and the Federal Circuit's precedents and, therefore, presents no compelling reason warranting review by this Court.

I. THE QUESTION PRESENTED BEARS LITTLE RELEVANCE TO THE ISSUES ACTUALLY PRESENTED IN THIS CASE.

Energizer's petition presents for review a sweeping question of patent claim construction—namely, whether the "context[ual]" understanding of experts skilled in the art trumps the plain language of a patent claim. *See* Pet. i; *id.* at 16. But much like its deficient patent, Energizer's question presented seeks to convert this case into something that it is not.

The issue presented to and decided by the panel in *Energizer IV* was not one of claim construction—let alone one involving an agreement among experts

regarding the meaning of the claim terms. As it arose from the Commission, the question was directed to the validity *vel non* of the patent in suit. More specifically, the panel was called upon to review the Commission's determination under Section 112 that the '709 patent was invalid—whether for lack of written description, as Judge Schall ultimately concluded, or for the inventor's failure to "particularly point out and distinctly claim" that which he had invented, as Judge Linn found. *See* Pet. App. 4a-25a; *id.* at 27a-30a.

Energizer spends substantial time early in its petition reciting at length various excerpts of certain experts' opinion testimony about how skilled artisans putatively would have "understood" the claim in its '709 patent. *None* of the three opinions comprising the Federal Circuit panel's decision discussed the testimony of the parties' experts. Pet. App. 1a-47a. Nor was the issue addressed in the Commission's decision. *Id.* 48a-70a. And Energizer hardly can be said to have pressed the issue on appeal, referencing the experts' testimony on the meaning of "said zinc anode" only in passing in its briefing below. (Petr.'s App. Br. 28-30.) Simply put, this case is not and has never been about the role of expert testimony in construing claims, despite Energizer's now-prominent treatment of that contention in its petition.

All parties, including Energizer, recognize that the claims as written do not match the written description of the invention. *See* Pet. 36; Pet. App. 22a; Ct. App. J.A. 10182; (Petr.'s App. Br. 28). But even if Energizer properly could characterize that "fundamental disconnect," Pet. App. 17a, as a "claim

construction" issue—or as Energizer now would have it, an issue about the role of expert testimony in construing patent claims—the legal issue identified in Energizer's petition *still* would bear no relevance to the actual facts of this case. For contrary to Energizer's suggestion, the parties' experts did not by a long shot testify or agree that "the only logical construction" of Claim 1 was "a battery with zinc" that "*would* produce an expansion of less than 25% if submitted to the gelling, discharge, heating, etc. testing process." Pet. 7, 15 (emphasis in original). Energizer's own expert testified that the term "said zinc anode" could only mean *the anode gel* of the claimed battery. Ct. App. J.A. 14438-39. Nor was there any agreement among the experts that the claim could be infringed merely if the "zinc anode"—whatever it might be—"would" produce the requisite expansion "if submitted" to the claimed test. Rather, a number of experts testified that the claim as written required the gel expansion test to be run in order for infringement to occur.

Energizer's own experts and the inventor himself agreed that the term "zinc anode" is not synonymous with "zinc powder." As one of Energizer's experts, Dr. Newman, explained: "A zinc anode is composed of various things that make up the whole system; it is different from zinc powder." Ct. App. J.A. 14438. Newman also testified that a zinc anode is a "material that has been formed of zinc, a binder and electrolyte to form a conductive * * * gel[,]" while zinc powder "would mean exactly that, zinc powder." Ct. App. J.A. 14438-39. Similarly, the inventor, Dr. Scarr, testified that, typically, an anode in a battery "contains zinc powder, an electrolyte, usually, in this case potassium hydroxide, aqueous electrolyte, and a

gelling agent which will hold the whole mass immobile to make it, sort of a paste out of this." Ct. App. J.A. 10334.

It simply is not true, then, that the broad legal issue presented in this case is whether a court may ignore "what skilled artisans recognize as the intended and only logical meaning" in favor of the plain text of the claim terms. Pet. i. To the extent the parties' expert testimony is relevant at this stage, that testimony at best presents a decidedly factual dispute regarding what one skilled in the art would understand the term "said zinc anode" to mean in the context of the patent.

Glossing over these inconsistent factual approaches, Energizer glibly suggests that "[t]he anode of an electrochemical cell *is* powdered zinc * * *." Pet. 36 (emphasis in original). But it is well past time to offer again the interpretation rejected by the Commission in *Energizer I* and by the Federal Circuit in *Energizer II*. Nowhere does the specification explain what a zinc anode is or equate the term "zinc anode" with "zinc powder." In fact, it does quite the opposite, equating the term "zinc anode" with "anode gel." *See* Pet. App. 105a-115a. And the claim itself makes clear that the "said zinc anode" of the claimed battery is what "has a gel expansion * * * after being discharged * * *." Supp. App. 8 (col. 10:62-64). Energizer conceded as much in its brief in *Energizer II*. (Petr.'s App. Br. 25) ("The 'has a gel expansion * * *' language modifies 'said zinc anode' and, therefore, must be taken into account when interpreting the claim."). Thus, it must be the anode of the battery that is discharged and that has the requisite gel expansion—not zinc

powder alone, or zinc powder in the anode of an unclaimed test cell.

* * *

The two judges comprising the Federal Circuit panel majority recognized that the unmistakable meaning of the claim as issued bears little resemblance to either Dr. Scarr's invention or the description thereof in the specification. But that does not present an issue of "claim construction," and it most certainly does not present the legal question whether purportedly "undisputed" (but actually clashing) expert testimony should govern the claim construction process. Energizer's patent was found deficient under Section 112, not because the majority ignored some universally agreed-upon "common sense construction" of the claim terms, Pet. 12, but because Energizer improperly sought to contort the plain meaning of the claim terms in order to claim more than it had invented. The facts of this case simply do not present an appropriate opportunity for this Court to address the question presented by Energizer for review.

II. THIS CASE PRESENTS A POOR VEHICLE FOR REVISITING CLAIM CONSTRUCTION PRINCIPLES IN ANY EVENT.

Even accepting Energizer's demonstrably fictive theory of the case, the Court should decline Energizer's invitation to reexamine general claim construction principles in the context of this case. The Court regularly encounters—and just as regularly denies—petitions for certiorari raising claim construction issues. Just last Term, for example, the Court in *Stryker Corp.* v. *Acumed LLC*,

128 S. Ct. 615 (2007), declined to take up the invitation to review the Federal Circuit's decision in a case where the question presented was quite similar to the one put forth by Energizer here. 483 F.3d 800 (Fed. Cir. 2007). The disappointed petitioner in the Federal Circuit's en banc decision in *Phillips* v. *AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005), *cert. denied*, 546 U.S. 1170 (2006), similarly sought and was denied certiorari on a claim-construction issue. This case, which involves a patent that suffers from so many quirky defects that the panel below had difficulty agreeing upon which of its various infirmities had invalidated the patent, should meet the same end.

The distinctiveness of this case, as briefly explained above, has its roots in an admitted drafting error: the applicant's use of the phrase "said zinc anode" in Claim 1 without any express antecedent basis earlier in the claim. *See* Supp. App. 8 (col. 10:62-64) ("and said zinc anode has a gel expansion of less than 25% after being discharged"). Rather than pointing to an implied antecedent basis for the term "said zinc anode," Energizer has suggested that the claim term in fact has no antecedent in the claim itself and instead refers to zinc powder that exists not in the claimed battery but, rather, in a test cell that is described nowhere else in the claim. Pet. 6-7. But that is the very interpretation rejected by the Federal Circuit in *Energizer II*, where the court concluded that "'anode gel'" is by implication the antecedent basis for 'said zinc anode,'" Pet. App. 88a, thereby reaffirming the importance of the word "anode" as the central noun of the claim. To further complicate matters, Energizer also argues that its use of the word "anode" constituted an *additional*

drafting mistake; Energizer suggests that the word "zinc powder" should have been used instead of "anode." Pet. 4, 6. And Energizer further suggests that the term "after being discharged" does not require discharge after all but, rather, reflects a "characteristic" or "property" of zinc powder that would be revealed if it were discharged. *Id.*

In other words, this is not a case where there is a single disputed claim term that is in conflict with the specification. Rather, Energizer itself suggests that its Claim 1 is replete with drafting errors that require the claim to be rewritten—almost in its entirety—in order to achieve Energizer's proposed construction. As a result of the foregoing "drafting errors," this case presents a rare instance in which the inventor actually testified at trial that the claim as issued does not describe what he considers to be his own invention. Ct. App. J.A. 954 ("I think that word 'anode' actually was there in error.").

These drafting problems were further compounded by Energizer's litigation-induced efforts to stretch the claims of the patent to cover that which they do not. As noted above, the Patent Examiner repeatedly rejected as obvious Energizer's attempts during prosecution of the patent to claim a *battery* made with low-expansion zinc, forcing Energizer to narrow the claims at issue. After obtaining issuance of the patent as a result of the narrowing of the claims, Energizer now seeks to use the specification (filed with the PTO along with the original, rejected claims) to expand the scope of the patent beyond what the Examiner allowed in an effort to grant itself a monopoly over the entire universe of zero-mercury-added alkaline batteries—sweeping in even

those batteries manufactured without using or even knowing about Dr. Scarr's test. What Energizer actually invented is a test to be run on prior-art zinc powder, and what it ultimately claimed in the patent (after repeated rejections in light of prior art) is a test to be run on the anode of a battery. But because the claim language that Energizer chose describes a test that no battery manufacturer uses and one that has no commercial application, what Energizer seeks to assert against the public is an inherent "characteristic" of zinc powder which does not even require the test to be run in order for infringement to occur.

This case also is unique because Energizer obtained a related patent, U.S. Patent No. 5,395,714, which actually *did* claim a battery with an anode containing "zinc" with the requisite gel expansion after being discharged. *See* Pet. App. 30a (noting that Claim 1 [of the '714 patent] recites "[a]n electrochemical cell comprising * * * an anode gel comprised of low expansion zinc which has a gel expansion of less than 25% after being discharged for 161 minutes to 15% depth of discharge at 2.88A"). This patent—which shows that Energizer knew how to formulate a claim in which the "zinc" as opposed to the "anode" had the requisite gel expansion when it wanted to—was *disclaimed* by Energizer on September 3, 2002, shortly before it filed its complaint in this case, because Energizer knew that the '714 patent had been invalidated by prior art.

Energizer's current problem, accordingly, is not one caused by the Federal Circuit's purported general stance on claim construction issues; it is an outgrowth of the fact that Energizer's patent is

fraught with inconsistencies. These inconsistencies resulted from Energizer's need to repeatedly narrow the claims in order to overcome prior art—each time moving farther from the invention described in the specification. The patent's inconsistencies were then exacerbated by Energizer's overt attempt to expand the claims after issuance to acquire a monopoly over virtually all zero-mercury-added batteries.

This case thus presents a Texas hat trick of reasons *not* to grant certiorari. The patent was issued under unusual factual circumstances. The patent is deficient or not infringed on multiple grounds, including some the Federal Circuit panel had no need even to reach. The panel's ruling lacks even a majority opinion representing the judgment of more than one judge of the Federal Circuit about the primary source of the patent's deficiencies. And the ruling was unpublished, and thus nonprecedential. For all of these reasons, the case is a demonstrably poor vehicle through which to institute Petitioners' sought-after grand reworking of Federal Circuit claim construction jurisprudence.

III. THE FEDERAL CIRCUIT'S JUDGMENT WAS CORRECT.

Although the two judges constituting the panel majority relied on different legal doctrines to invalidate Energizer's patent, they both recognized the existence of what Judge Schall described as a "fundamental disconnect" between what the patentee claimed and what the specification described, Pet. App. 17a, and both found the patent invalid under 35 U.S.C. § 112. While Judge Schall found the patent invalid under the written description requirement of

35 U.S.C. § 112, ¶ 1, and Judge Linn did so under the definiteness requirement of 35 U.S.C. § 112, ¶ 2, both appropriately premised their conclusions on the principle that a patentee cannot claim something that is entirely at odds with what he invented and described in the specification. Pet. App. at 17a-18a; *id.* at 29a.

Judge Schall noted that Claim 1 fails to comply with the written description requirement of 35 U.S.C. § 112, ¶ 1, because the subject matter described in the claim is not adequately described in the specification:

> In a word, at the root of the written description issue in this case lies the fact that the invention of the '709 patent is a test to pre-screen zincs for use in zero-mercury-added alkaline batteries to be sold to consumers. * * * [T]hat is the invention that is described in the patent specification. However, the claims of the '709 patent were drafted to claim commercial alkaline batteries. * * * The problem in this case is that the specification of the '709 patent does not teach what is claimed, whereas the claims of the patent do not claim what is taught. [*Id.* at 24a] [citation omitted.]

Judge Schall's analysis is in keeping with the language of the statute, as well as case law interpreting the statute. *See, e.g., Univ. of Rochester* v. *G.D. Searle & Co.*, 358 F.3d 916, 927 (Fed. Cir. 2004) (written description requirement mandates that specification describe the subject matter of the invention later claimed to be protected in the claims).

Judge Linn, like Judge Schall, concluded that Claim 1 failed under Section 112, but under paragraph 2 of the statute. As he noted, Dr. Scarr's invention was "a battery cell with an anode containing zinc of a purity determined by use of the disclosed test cell procedure * * *" Pet. App. 29a. But that is not what Claim 1 "particularly point[s] out and distinctly claim[s]." *Id.* Judge Linn therefore concluded that Claim 1 fails to comply with Section 112's definiteness requirement. *See* 35 U.S.C. § 112, ¶ 2 ("The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."). Judge Linn's analysis, too, comported with prior Supreme Court and circuit precedent. *See Allen Eng'g Corp.* v. *Bartell Indus., Inc.*, 299 F.3d 1336, 1349 (Fed. Cir. 2002) ("Where it would be apparent to one of skill in the art, based on the specification, that the invention set forth in a claim is not what the patentee regarded as his invention, we must hold that claim invalid under § 112, paragraph 2."); *see also Western Elec. Mfg. Co.* v. *Ansonia Brass & Copper Co.*, 114 U.S. 447, 452 (1885) ("The scope of letters patent should be limited to the invention covered by the claim; and, though the claim may be illustrated, it cannot be enlarged, by the language and other parts of the specification.").

Whether one chooses (as did Judge Schall) to label the insoluble incongruity between Claim 1 of the '709 patent and its specification a failure of written description or (as did Judge Linn) to call the same deficiency a failure of definiteness, the end result is the same, and the patent is invalid under either or both doctrines. *See Permutit Co.* v. *Graver Corp.*,

284 U.S. 52, 58 (1931) ("As the patentee has thus failed to give in the specification 'a written description' and has likewise failed particularly to point out and distinctly claim the free zeolite bed, as 'the part, improvement, or combination which he claims as his invention or discovery,' the patent is void."). Both elements of the statute prohibit an applicant from claiming that which was not fully and adequately described in the specification.

Energizer cannot sidestep this problem by relying on the specification to suggest a meaning for the claim terms that runs directly counter to the language used by the applicant. *See* Pet. 4, 6-7, 28, 36. As this Court has long held:

> Some persons seem to suppose that a claim in a patent is like a nose of wax, which may be turned and twisted in any direction, by merely referring to the specification, so as to make it include something more than, or something different from, what its words express. The context may, undoubtedly, be resorted to, and often is resorted to, for the purpose of better understanding the meaning of the claim; but not for the purpose of changing it, and making it different from what it is. The claim is a statutory requirement, prescribed for the very purpose of making the patentee define precisely what his invention is; and it is unjust to the public, as well as an evasion of the law, to construe it in a manner different from the plain import of its terms. This has been so often expressed in the opinions of this court that it is unnecessary to pursue the subject

> further. [*White* v. *Dunbar*, 119 U.S. 47, 51-52 (1886).]

Even if Energizer were correct, moreover, in resorting to the specification to assert that the term "said zinc anode" could be construed to refer to the zinc powder that is selected for use in a battery, rather than the anode gel of the battery itself, the claim still would be invalid for failure to comply with the written description requirement. The specification describes how to discharge and measure the gel expansion of an anode of a test cell; it does not describe how to discharge and measure the gel expansion of zinc powder alone, either before or after it is placed in the claimed battery. *See* Pet. App. 52a (Commission analysis). Nor does the specification describe how to correlate the results of the gel expansion test as applied to an individual zinc powder sample with the gel expansion of the anode gel of the battery. *See id.* at 11a-12a (Federal Circuit reviewing Commission analysis); *id.* at 123a-124a & nn. 11-12 (Commission analysis). Even if Energizer's favored claim construction had carried the day, then, the end result would be the same: the patent is invalid.

CONCLUSION

For the foregoing reasons, the petition should be denied.

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IN THE

Supreme Court of the United States

ENERGIZER HOLDINGS, INC. AND
EVEREADY BATTERY COMPANY, INC., PETITIONERS,

v.

UNITED STATES INTERNATIONAL
TRADE COMMISSION, ET AL.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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The briefs in opposition filed by the Federal Respondent and the Private Respondents confirm the need for review by this Court. Respondents sidestep the Petition's showing that claim construction in the Federal Circuit is plagued by a longstanding division between two approaches and now includes an outright rejection of the principle that construction should strive to avoid invalidity. The conflicts over such principles pervasively affect patent cases and controlled the outcome in this case. It is time for this Court to step in to restore the substance-focused approach to claim construction that the Court has required on other patent issues in its recent cases.

Though Respondents seek chiefly to show that this is not a suitable vehicle for this Court's attention, none of respondents' arguments has merit. Instead, this case is a good one in which to resolve the important claim-construction issues, because: (1) it starkly portrays the contextual versus hypertextual approaches to claim construction; (2) it presents clearly the failure to follow this Court's precedent on validity preservation; and (3) it sharply highlights the consequences of erroneous claim construction.

By rejecting the only sensible construction, the Federal Circuit invalidated a patent that embodies precisely what the patent system exists to encourage: the investment of significant resources in research to produce a socially important technological advance – an alkaline battery needing no addition of mercury (licensed by a majority of the world's major battery manufacturers).

I. THE PROPER APPROACH TO CLAIM CONSTRUCTION IS IN NEED OF THIS COURT'S CLARIFICATION

Rather than refute the question presented by Petitioners, the Private Respondents expressly acknowledge the central basis for Energizer's petition: it is undisputedly clear what is "the advance in the art invented and described by the patentee" and "what the inventor . . . regarded as his invention." Private Resp. Opp. i (question presented), 3. Moreover, in noting that the advance was "described by the patentee," the Private Respondents recognize that the invention is identified with clarity in the patent specification itself, as well as being confirmed by expert testimony and party concessions. The evidence "intrinsic" to the patent document and its history in the PTO aligns with the "extrinsic" evidence in making clear what the invention is.

The question presented is both simple and important. Did the Federal Circuit err in refusing to construe the patent claim to capture what the parties agree is "the advance in the art invented and described by the patentee"? In particular, did the Federal Circuit err in relying on a hypertextualist approach to reject that realistic and validity-preserving construction? The choice of approach by the panel majority was case-dispositive, reflects a persistent division within the Federal Circuit, and is contrary to the principles stated in this Court's precedents, including that claims should be construed with the objective of "ascertaining the invention" (*United States v. Adams*, 383 U.S. 39, 49

(1966)) and "sustain[ing] the patent" (*Klein v. Russell*, 86 U.S. (19 Wall.) 433, 466 (1873)).

As extensive commentary on claim construction confirms, there is a fundamental divergence in approach among different judges and panels of the Federal Circuit. That divergence pre-dated the *en banc* decision in *Phillips v. AWH Corp.* 376 F.3d 1382 (Fed. Cir. 2004), and was not resolved by that decision (Pet. 16-28) – except in one respect that now independently calls for this Court's review, namely, the rejection of the validity-preservation principle mandated by this Court's precedents (Pet. 23-24).[1]

Some claim-construction analyses, like the majority's here, rely primarily and in effect dispositively on what they view as the unavoidable implications of the words and grammar of the claim language in isolation, as the judges themselves (rather than skilled artisans) understand the language. Judges using that approach draw a strong conclusion about the sole correct claim

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[1] *See, e.g.*, Cheryl Lee Johnson, *The Continuing Inability of Judges to Pass Their Markman Tests: Why the Broken System Leaves Judges Behind, Confused and Demoralized*, 941 PLI/Pat 65, 71 (2008) ("[District judges] must labor under claim construction rules which change at a dizzying pace. The Federal Circuit, in a string of cases from *Vitronics* to *Phillips*, has charted a notoriously jerky path, embracing disparate and contradictory claim construction approaches variously described as 'contextual,' 'holistic,' 'formalistic,' 'procedural,' 'dictionary-driven,' 'ordinary-meaning' or 'specification-driven.' . . . While the Federal Circuit promised it would straighten out the basic guidelines in *Phillips*, it missed the delivery. . . . [District] Judges must . . . construe patents to the satisfaction of the Federal Circuit which itself can't agree on the ground rules, much less their applications.").

interpretation and, unless they find what they regard as a contrary "definition" in the patent documents, do not allow their conclusion to be displaced by even undisputedly clear identification of "the advance in the art invented and described by the patentee" and "what the inventor regarded as his invention." And they insist on their conclusion even when doing so, as in this case, renders the claim invalid – even when the reason for invalidity is a problem of claim indefiniteness or lack of written-description support that adopting the plainly intended claim construction would immediately cure.

The competing claim-construction approach recognizes that the words and grammar of the claim themselves rarely eliminate room for contextual or skilled-artisan understanding, and it therefore examines the context and reliable evidence of skilled artisans' understanding from the very outset in arriving at the proper claim interpretation. That context consists primarily of the patent documents – the specification and the prosecution history – which, as in this case, identify with clarity "the advance in the art invented and described by the patentee" and "what the inventor regarded as his invention." But skilled artisans' understandings may be evinced from expert testimony or other sources as well. This approach, far from ignoring the claim language, takes a holistic approach to the task of interpreting a document written for technical people, not judges. At the same time, it strives to avoid the "gotcha" invalidity results of the hypertextualist approach produced by reading the claim in isolation to depart from the described invention and on that basis invalidating the claim.

This divergence in approach matters tremendously in patent litigation. The proper construction of claims is an essential step in assessing almost all issues of infringement and validity. And as long as the divergence in approach persists, there remains profound uncertainty about the perspective required for construing claims – an uncertainty that affects parties in advance of potential lawsuits and district courts as litigation proceeds. Although claim interpretation by its nature will never be mathematically precise, the fundamental question of how to approach it should be resolved so as to reduce dramatically the range of uncertainty faced by litigants and courts.

II. THIS CASE IS A GOOD VEHICLE TO PROVIDE CLARIFICATION

This case presents a good vehicle for settling the deep dispute about the proper approach to claim construction, because "the advance in the art invented and described by the patentee" is so starkly clear. None of the respondents' efforts to argue otherwise has merit.

The Federal Respondent suggests that the Federal Circuit effectively decided the claim construction question in the first appeal (*Energizer II*). Federal Resp. Opp. 12. But that is simply immaterial: even if the die was cast about claim construction by *Energizer II*'s language about the antecedent basis for "said zinc anode," the claim construction is properly presented for review here. It is well established that an interlocutory ruling like *Energizer II* is fully available for review after the final judgment. *See, e.g., Major League Baseball Players Ass'n v. Garvey*, 532 U.S. 504, 508 n.1 (2001)

(*per curiam*); *Urie v. Thompson*, 337 U.S. 163, 171 (1949). The present petition challenges the claim construction ruling regardless of where it appeared.[2]

The Federal Respondent suggests that the claim language is just too clear to allow construction according to the evidently intended meaning. That assertion is simply insupportable except on the very hypertextualist approach that is at issue. Only on that basis could the judges overread "said zinc anode" to refer to "anode gel," ignoring the plain contrary understanding of skilled artisans – who recognize the *conceded* impossibility of any commercial battery satisfying the claim under the competing construction, which was therefore nonsensical. Federal Resp. Opp. 13.

The case perfectly illustrates the critical importance of approaching the problem from the right perspective. The Federal Circuit had to consider three potential antecedent bases for the phrase "said zinc anode": (1) the entire phrase "anode gel comprised of zinc as the active anode component"; (2) the portion of that phrase – "anode gel" – as the Private Respondents had argued; or (3) the portion of that phrase – "zinc" – as Energizer

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[2] The Federal Respondent stresses that *Energizer II* was "unanimous" (Federal Resp. Opp. 12), but that is not significant. Indeed, Judge Newman did not think that *Energizer II*, in deciding what the antecedent basis was, settled the claim construction issue. Pet. App. 46a. Regardless, when the issue of claim construction was brought into focus on the second appeal, Judge Newman explained why she thought that Energizer's position is correct and could be rejected only under an incorrect hypertextualist approach to claim construction. *Id.* at 46a-47a.

had argued. Selecting the entire phrase or just the word "zinc" resulted in the same claim interpretation in light of the discharge limitations.

Any claim construction that focuses on how the skilled artisan understands the claims precludes reading the phrase "said zinc anode has a gel expansion of less than . . ." from requiring discharge of the anode gel of the claimed battery, a requirement that skilled artisans would know was non-sensical and therefore not meant. Instead, the skilled artisan would understand after reading the specification, including the Examples, that what is claimed is *zinc* having the low expansion characteristic. That is what the specification describes.

The skilled artisan would draw the same conclusion, beyond any doubt, from the publicly available prosecution history that is always part of understanding patent claims. The patent Examiner allowed the claims after an amendment specifically deleted the word "gel" from the phrase "said zinc anode gel." The patentee explained the amendment:

> Claims 45, 48 and 49 have been amended to correct a grammatical error. *It is the zinc which is to be tested, as set forth in the specification.*

See Ct. App. JA2402 (emphasis added). Reflecting this history, the ALJ determined that "said zinc anode" referred to "zinc as the active anode component." *See* Pet. App. 136a-142a.

The Private Respondents suggest that the prosecution history of earlier related patents[3] might support *their* claim construction. Private Resp. Opp. 22. The just-quoted statement conclusively proves the opposite: Energizer made perfectly clear that it was the zinc itself that was to be tested. Indeed, as the Federal Respondent notes, the ALJ correctly observed that the amendment made in the PTO "made clear that the applicant's 'intention was that the 'said zinc anode' refer to the zinc.'" Federal Resp. Opp. 4 (quoting Pet. App. 140a).

Interpreting "said zinc anode" to mean "anode gel" essentially puts the word "gel" back into the claim, overriding the plain meaning of the amendment deleting that term and specifying that it was the zinc which is to be tested. Doing so also results in a claim construction that does not cover the batteries set forth in the Examples or any commercially available alkaline battery. The skilled artisan, for whom patents are written, thus knew perfectly well that "said zinc anode" here meant the zinc that was the active anode component. For that reason, and to avoid the invalidation that otherwise

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[3] The Examiner rejected some claims during the prosecution of those patents on the basis that the phrase "low-expansion" was a relative term and therefore indefinite. *See* Ct. App. JA2145. That rejection was not based upon prior art. The patentee substituted the discharge limitations to define "low-expansion" zinc as a zinc with a low post-partial discharge characteristic (which expands less than 25% after being discharged at 2.88A for 161 minutes to 15% depth of discharge). The substituted language, while obviating the Examiner's rejection, means in the context of the specification the same thing as "low-expansion zinc." *See* Ct. App. JA2152-58, 2218, 2222.

followed, that interpretation therefore should have been adopted.

Both respondents rely on the inventor's testimony that he thought that the word "anode" was put into the claim in error. *See* Federal Resp. Opp. 5; Private Resp. Opp. 8. But that testimony, even as a subject matter, does *not* dispute what the invention described or even claimed is.[4] And it is simply beside the point. Even if the inventor thought that the prosecuting attorney included the word in "error," the question remains what the word means once included, and that question must be answered objectively by asking how a skilled artisan would understand the patent document. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 985 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996) (for public document, subjective views of inventor essentially immaterial); *Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1378-80 (Fed. Cir. 2000). That

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[4] The ALJ rejected the Private Respondents' arguments concerning the portion of Dr. Scarr's testimony that is currently cited by both respondents. The ALJ, citing Dr. Scarr's other testimony and the ALJ's claim interpretation, stated:

> The undersigned has construed the term "said zinc anode" to refer to the zinc as the active anode component. When "said zinc anode" is interpreted in this manner, Claim 1 reflects what Dr. Scarr regarded as his invention, which is a test that allowed EBC to select zincs to be used in a zero-mercury-added alkaline battery. In addition, what Dr. Scarr testified about regarding the "said zinc anode" language was that he thought that "said zinc anode" referred to the zinc powder.

See Ct. App. JA897 (footnotes omitted).

approach requires Energizer's and the ALJ's construction, for all the reasons discussed.[5]

The Private Respondents suggest that zero-mercury-added batteries and low-expansion zinc were known in the prior art. *See, e.g.*, Private Resp. Opp. 3-4.[6] But this is nothing but an effort to insert an argument for invalidity in light of prior art. Neither the Federal Circuit nor the ITC found invalidity on any such ground. To the contrary, when Private Respondents made such arguments, the ALJ rejected them, sustaining the validity of the

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[5] Petitioners regret the error of printing the public version of the Commission's opinion in the Petition Appendix. Petitioners failed to recall that the only confidential portion of the opinion had later become public. The testimony, as noted in text, is beside the point.

[6] The Private Respondents also make an argument about the EPO file history. What they conveniently omit is the follow-up correspondence, which retracted the very statement that the respondents cite in footnote 2 on page 5. The follow-up letter stated:

> The case is that low expansion zinc is <u>not</u> known <u>at all</u> from the prior art and, whilst it has been stated in a previous letter that it was known, we believe that the Examiner will agree with us that there is no basis for such a statement, except for the unfortunate paragraph in our previous letter.

Ct. App. JA7495. European counsel's statement was incorrect and was retracted. Moreover, that series of correspondence was in the context of issues concerning written description support in the European specification. The specifications of the European and U.S. patents are considerably different from one another. The specification of the European application does not include the description of the gel expansion test that appears at Col. 4:38 – Col. 5:45 of the '709 Patent. *See* 2005 Ct. App. JA7380-7405.

patent (Ct. App. JA839-898). While the Private Respondents questioned these findings, those questions were not reached by the Commission reviewing the ALJ's Initial Determination. *See* Pet. App. 124a.

Lastly, the Private Respondents suggest that even if Energizer were to get the claim interpretation it seeks, the patent would nevertheless be invalid for failure to meet the written description requirement. *See* Private Resp. Opp. 27. That assertion is insupportable and, indeed, directly contradicts what the entire panel recognized: that the specification clearly sets forth exactly what Energizer urged and the ALJ found to be the proper claim construction. (A sample of the zinc powder is used to formulate the gel used in the test cell that is discharged to determine the post-partial discharge characteristic of the zinc used in the accused battery. Col. 4:38 – Col. 5:45.) It was only the majority's refusal to construe the claims to match what the written description clearly revealed as the invention that led to the invalidity ruling. There was no doubt that the written description describes the invention under Energizer's claim construction.

That is why the proper approach to claim construction is clearly presented by the Federal Circuit's decision. This Court should grant review.

CONCLUSION

The petition for a writ of certiorari should be granted.

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